

# PC GAMER®

## ANNUAL

2023

PC GAMER

# T100P

THE BEST GAMES  
YOU SHOULD  
PLAY TODAY



## DEAD SPACE

MAKING THE SCI-FI  
HORROR CLASSIC



## DUNE II

SHAPING THE  
FUTURE OF THE RTS



## DUNGEON MASTERS

HOW D&D SHAPED  
PC GAMING



## HALF-LIFE 2

SUPERCARGE  
GORDON FREEMAN

Digital  
Edition



VOLUME 6

## EXTRA LIFE

RED DEAD  
REDEMPTION 2  
ELDEN RING  
AGE OF EMPIRES IV  
& MORE!







# “WE SHOWCASE THE GAMES YOU SHOULD BE PLAYING RIGHT NOW”



## ROBIN VALENTINE

### Twitter

@robinvalentine

### This year

Mourning *Legends of Runeterra* dropping out of the latest Top 100.

Welcome to the latest edition of the PC Gamer Annual. In this special compilation, we've compiled the best games, features and Extra Life mischief from the magazine's last 12 months. We celebrate the diversity of PC gaming as a platform and showcase the games you should be playing right now in the latest version of our annual Top 100 list. On page 40, we meet the indie

devs creating micro-RPGs to rival the 100-hour beasts. On page 66, we explore how D&D inspired iconic games like *Doom* and *Deus Ex*. And on page 96, the creators of the original *Dead Space* tell us about its development. So, what are you waiting for?

## ROBIN VALENTINE

### PRINT EDITOR

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## TALK TO PC GAMER

Have your say!  
Email us at [letters@pcgamer.com](mailto:letters@pcgamer.com)

## The PC Gamer team



## LAUREN MORTON

### Twitter

@ComradeCupcake\_

### This year

Played 20 hours of *The Sims 3* and never even got a job. Wallpaper patterns and building tools come first.



## IMOGEN MELLOR

### Twitter

@ImoMellor

### This year

Has been enjoying the guilty pleasure of headshotting enemies before they even know she's there.



## MATT KILLEEN

### Twitter

@by\_Matt\_Killeen

### This year

Attempting to kill everyone in *Hitman* has taken the fun out of killing for him in a game that's all about killing.



## JEREMY PEEL

### Twitter

@jeremy\_peel

### This year

Investigating how D&D has shaped every corner of PC gaming, from *Doom* and *Deus Ex* to *Mass Effect* and *Baldur's Gate*.



## MORGAN PARK

### Twitter

@MorganRPark

### This year

Celebrating the modern shooters that make aim-down-sights optional and encourage shooting from the hip.



## CHRIS LIVINGSTON

### Twitter

@screencuisine

### This year

Tried to get back on the straight and narrow and earn an honest wage in *Red Dead 2*.



## PHIL IWANIUK

### Twitter

N/A

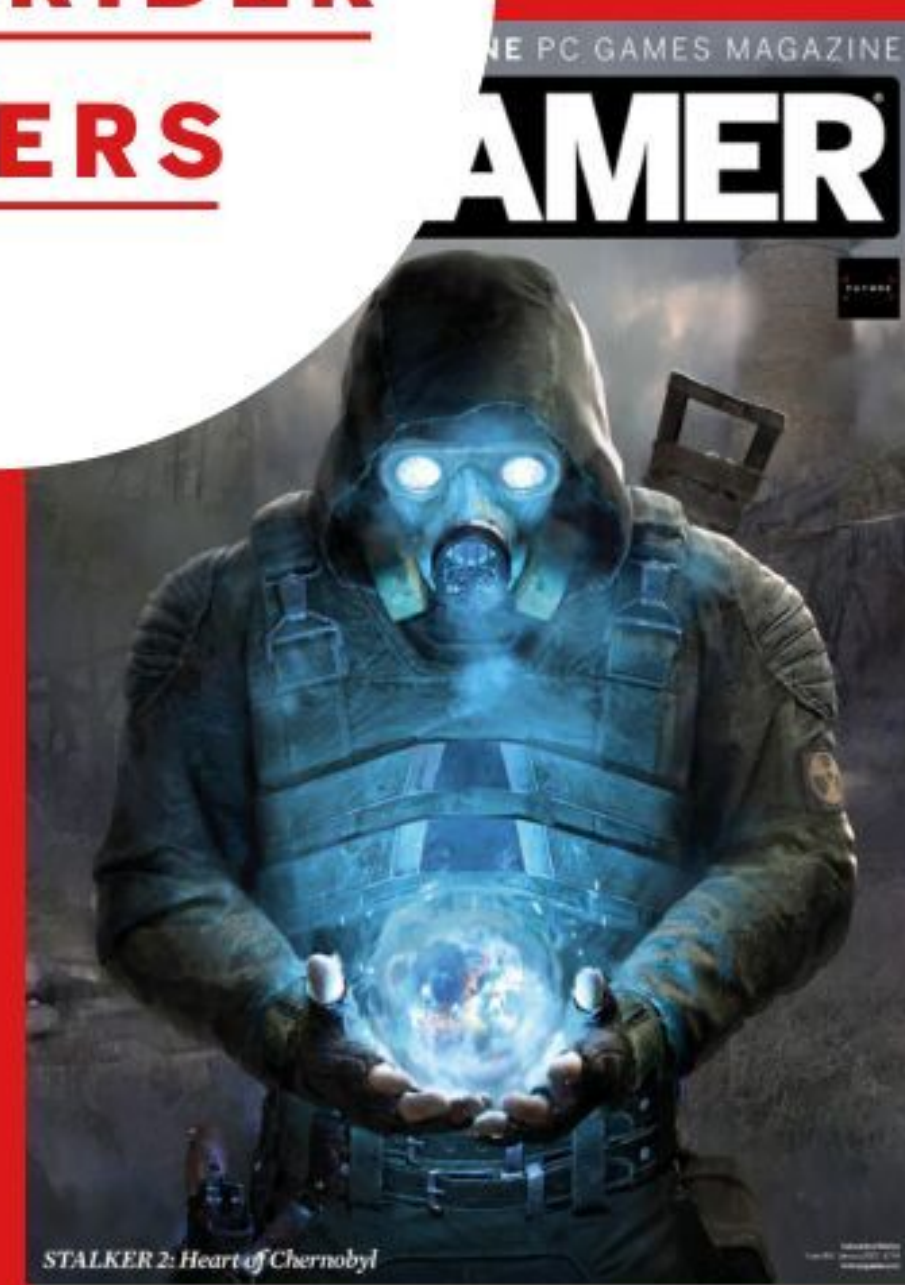
### This year

Has been busy devising outlandish schemes to cheat his way to glory in *Football Manager 2022*.





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With our industry-leading access, we get the full scoop on the most exciting upcoming PC games every month. With our in-depth developer interviews and expert hands-on impressions, you can trust our previews to keep you informed, and give you an early peek into blockbuster titles and undiscovered indie darlings alike.



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No one knows PC gear like we do. Our dedicated hardware team tests and reviews every part they can to bring you comprehensive guides to what to buy and when. Every issue features expert build guides, aimed at giving you the best gaming experience at every level of budget, as well as reviews, features, and even the latest news and discoveries from the world of computer technology.

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## 09 THE PC GAMER TOP 100

Discover the definitive 100 greatest PC games to play in 2022 in our annual list.

## 40 MICRO-RPGS

Why do we always expect an RPG to be over 100 hours long? Can you evoke the best parts of the genre in a far shorter form? Meet the indie devs working on just that.

## 48 DUNE II

We look back on the masterful sci-fi adaptation that shaped the future of the RTS and which is still used as a template for the genre to this day.





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## SPLINTER CELL: CHAOS THEORY

The creators of a stealth masterpiece help us discover the secrets of its development.

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## THE DUNGEON MASTERS

How were iconic games like *Doom* and *Deus Ex* inspired by D&D? We chat to the developers to find out.

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## THE MAKING OF DEAD SPACE

As the remake approaches, we chat to the original creators of *Dead Space*.

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## LOW-SPEC GAMING

We investigate the underappreciated art of making games run on lower end hardware.



# *Join the conversation!*



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readers at our official forums

**[forums.pcgamer.com](https://forums.pcgamer.com)**

**PC GAMER**





**T**he definitive 100 greatest PC games to play in 2022 stretch out before you over the coming pages. Not the best of all time, or the most important, but the ones we think you should try right now—whether they're modern hits or well-aged classics.



## PERSONAL PICK

Mollie Taylor



### HATSUNE MIKU PROJECT DIVA MEGAMIX+

The best rhythm game series finally came to PC. Easy to learn yet difficult to master, your thumbs will be sweating as they frantically dance across a massive library of computerised Japanese beats. Vocaloid isn't everyone's cup of tea, but it's catchy as all hell.

## PERSONAL PICK

Nat Clayton



### SABLE

*Sable* isn't a game about action, adventure, or saving the world. Instead, your journey across its pastel world is a warm hug of self-discovery: ascend mountains for the sake of it, try on new faces, meet people, and glide on your jetbike to the relaxing sounds of Japanese Breakfast.



### 100 ZERO ESCAPE: THE NONARY GAMES

RELEASED 2007 | LAST POSITION New entry

**Jody:** Puzzle dungeon visual novels of the "you wake in a room" variety, the *Zero Escape* games burst with gory deaths and narrow getaways. Nine people get trapped in mazes as twisty as the games' jumbles of esoterica and hidden histories.

**Phil:** Satisfying puzzles and philosophical paradoxes, through an anime filter. It keeps you guessing as you navigate the timeline, unpicking a grand mystery.

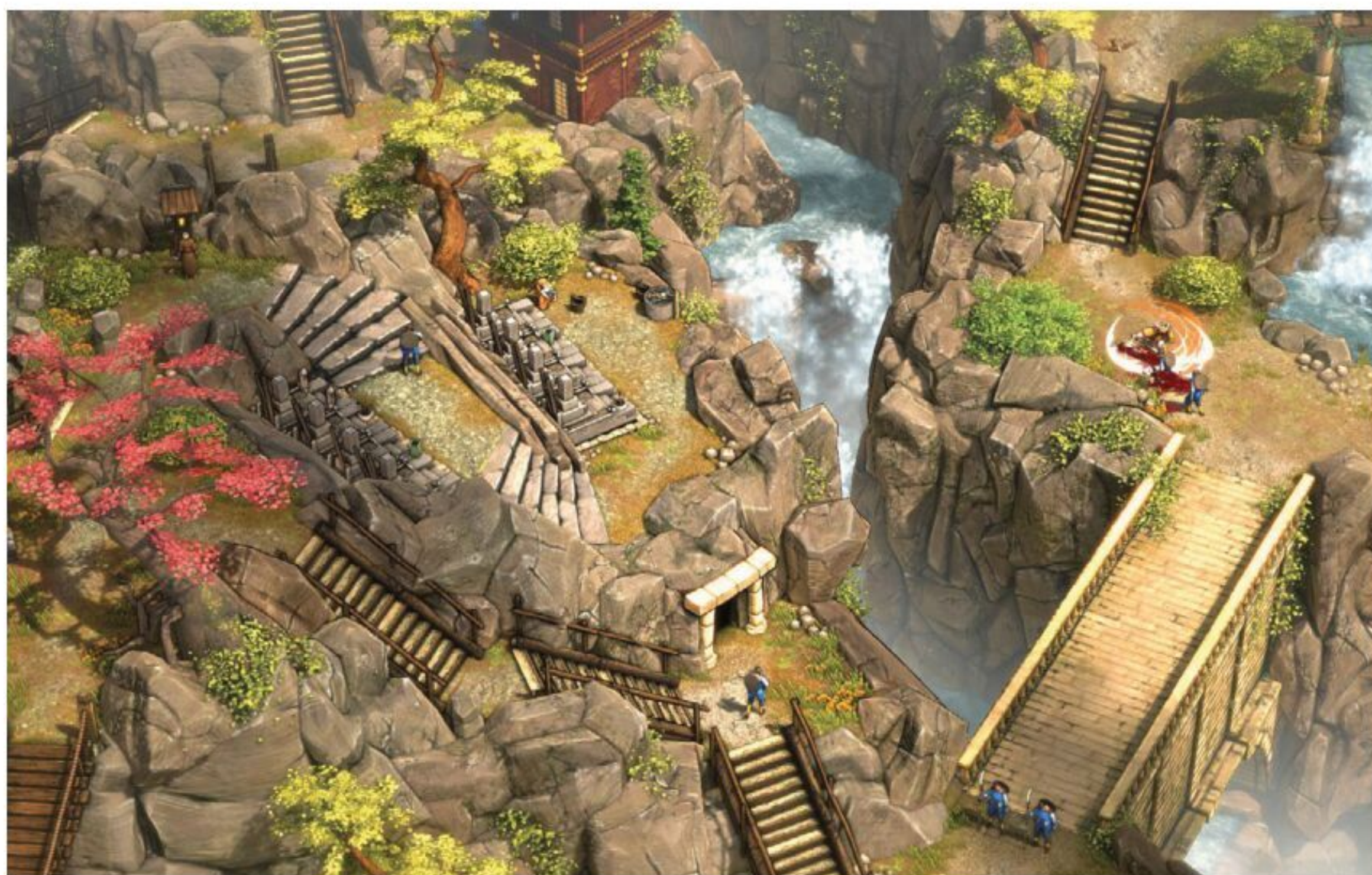
**Mollie:** I'm still reeling from Virtue's *Last Reward* years later. What a goddamn trip.

### 99 SHADOWRUN: HONG KONG

RELEASED 2015 | LAST POSITION New entry

**Jody:** One recruitable companion in this cyberpunk-fantasy RPG is a Japanese ghoulish samurai. Bringing him along on heists and infiltrations means fast-talking guards and civilians to convince them he's an actor or a cosplayer. Your whole crew is made of misfits, including a rat-spirit shaman who treats garbage like gourmet.

**Robin:** The excellent *Shadowrun: Dragonfall* has been in our list for a few years now, but I definitely prefer Hong Kong for its brilliantly evocative setting.



### 98 SHADOW TACTICS: BLADES OF THE SHOGUN

RELEASED 2003 | LAST POSITION 95 ▼

**Lauren M:** *Shadow Tactics* is the immaculate tactical stealth success that proved Mimimi Games had the chops to take up the *Desperados* series. Every mission is a lovely puzzle, and there's an immense joy in meticulously setting up a simultaneous kill using all my party.

**Phil:** One of the most rewarding stealth games of recent years, embracing the unforgiving attitude of the genre but modernising it where it counts. The real pleasure here is being dropped into large maps full of guards, and slowly picking apart the puzzle of their intricate patrol

routes as you work your way through. Your motley crew brings a variety of ways to distract, dispatch and disappear your foes, and it's these asynchronous abilities that make the difficulty so satisfying to overcome. Some are nimble, able to navigate rooftops and tricky terrain. Others are stuck to the ground, but bring traps and tricks to help clear a path.

Shadow Mode, which lets you queue up moves for your team to execute at the same time, is inherently cool, as you painstakingly plan multiple takedowns, hit a button, and watch the action play out.





# T100P

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## TEAMFIGHT TACTICS

RELEASED 2019 | LAST POSITION New entry

**Fraser:** One of the last autobattlers left standing – the product of a short-lived trend that no doubt benefited from sharing a launcher with the rubbish but immensely popular *League of Legends*. I love the constant reinvention of characters and mechanics, and building my loadout of heroes mid-battle, but the real appeal is how easy it is to just hang out and shoot the shit with friends while my diligent little warriors duke it out or die.



96

## THE FORGOTTEN CITY

RELEASED 2021 | LAST POSITION New entry

**Jody:** Groundhog Day with gladiators. There's only one gladiator, but you get the point. You're in a time loop, reliving a single day in ancient Rome.

Time loop games seem like a great idea, but it turns out redoing the same thing even more than videogames usually demand is actually super frustrating. *The Forgotten City* gets around that with two inventions: an arguably anachronistic zipline, and a sensible human being. The wonderful Galerius greets you each day, and when you barrel up to him shouting instructions to save the lives of people you figured out how to save in the previous loop, he just gets on with it. Gordian knot elegantly cut.

That knot was Greek, but you still get the idea.



95

## THUMPER

RELEASED 2016 | LAST POSITION Re-entry

**Nat:** Once, in Berlin, I played an early build of *Thumper* so hard my thumbs bled. Deep, violent bass throbbing through my skull, an assault of neon violets burning my eyes, desperately trying not to shed blood all over a shared gamepad, I embodied Thumper in its entirety – a pure rhythm hell where you stop looking at the beats coming down the track, and start feeling the rhythm pounding through your body.

**Jody:** You're a god-killing space beetle. What could be more immaculate?



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## TITANFALL 2

RELEASED 2016 | LAST POSITION 88 ▼

**Nat:** Last year, *Titanfall 2* was basically dead. While that campaign is still solid as hell, DDoS attacks had rendered multiplayer servers largely unplayable. But in December, *Titanfall 2* got a Christmas pressie in the form of Northstar – a fan-run server browser that shot new lift into the knackered old mech.

In 2022, *Titanfall 2* isn't just playable. It's

thriving. While early builds only allowed for certain modes on certain maps, Northstar is now a wonderfully chaotic mess of custom gametypes and modded mechs, the best of which sees BT literally throw you into the start of each new round. It's a throwback to the good ol' server browser days, and a perfect place for *Titanfall 2* to spend its long-overdue retirement.



## 93 FALLOUT: NEW VEGAS

RELEASED 2010 | LAST POSITION 87 ▼

**Jody:** New Vegas blends the strengths of Fallouts old and new. It's got some of the originals' problem-solving variety, letting you talk round a fascist legionnaire or a brain in a jar, and the 3D world and VATS combat of modern Fallout, with the pleasant ding of XP earned and the foreboding rumble of new quests begun.

**Imogen:** Can't believe we don't have rules against games that require a library of mods to work well.

**Jody:** Three mods isn't a library!

**Nat:** Janky, ugly, rubbish.

**Chris L:** Bethesda plus Obsidian, yeah, you're gonna get tons of jank. But for an RPG I've already played multiple times I could dive back in today and have a wholly different experience with consequences and choices I've never encountered before.



## 92 COMMAND & CONQUER REMASTERED COLLECTION

RELEASED 2020 | LAST POSITION No change

**Phil:** Two classic RTSes in one loving package makes this an easy recommendation despite the age of its source material. Red Alert, in particular, is practically timeless – an alternate history World War II where Einstein travels back in time to assassinate Hitler. The result is much as you'd expect: campy FMV cutscenes, a pumping industrial soundtrack, and the deadly thrum of Tesla Coils as they prepare to decimate your army. Still a joy to play.





91

## INSIDE

RELEASED 2016 | LAST POSITION New entry

**Rich:** Inside may be bringing up the rear in this list but it's one of the best experiences I've had in gaming. A contemporary re-casting of the Frankenstein myth, the environments are a near-seamless blend of clever puzzles and bleak suggestion about where you are. Horror, sci-fi, and for my money the best twist in games.

**Sean:** Inside is the perfect narrative sidescroller: it's got atmosphere, a moody soundtrack, smart puzzles, and most important of all: tension. As you pilot the boy through rainswept ruins and enslaved cities towards whatever end, Inside does that rarest of things, making you consider the act of playing the game itself.

**Nat:** Inside is a game you only play once. But that one time is a masterclass in mood, in building up tension and dread as you push a small child further into a brutalist meat grinder. It's playing in almost the exact same space as Limbo, a trial-and-error platformer more than a real puzzler, but the artistry on display is phenomenal, woods and barns and deeper, darker industrial places all painted in a dreary watercolour greyscale that pushes you towards hopelessness.

**Robin:** Has to be said, it's got one of the best endings of any game. If it's not been spoiled for you yet, then oh boy are you in for a treat.



90

## SNOWRUNNER

RELEASED 2020 | LAST POSITION 80 ▼

**Morgan:** Snowrunner is the best game about driving trucks through mud ever made. Not that it has much competition, but this is one sim you should really try for yourself. Jobs are various versions of "deliver X to Y," but they're really just reasons to have fun carving a path through natural hazards. It also sports some of the best physics-based suspension and land deformation tech around. It dropped a few places this year, but Snowrunner is still an easy recommendation.

89

## HOMEWORLD REMASTERED

RELEASED 2015 | LAST POSITION 78 ▼

**Nat:** Homeworld is PC gaming's great space opera. A majestic, galaxy-spanning drama played out in a way only games could manage—by way of a perfectly executed three-dimensional spacefaring RTS. Gearbox did a hell of a job remastering the games to not only look gorgeous, but play with a little less '90s faff, and a thriving mod scene means Homeworld also doubles as a phenomenal RTS adaptation of Star Wars, Star Trek, Halo, Mass Effect and more.



88

## TEKKEN 7

RELEASED 2015 | LAST POSITION 74 ▼

**Mollie:** Bombastic, crisp combat and an electrifying soundtrack keep me coming back to Tekken 7. I still can't find another fighting game that's this much fun to watch and play. It has a steeper learning curve than some, but it's totally worth it. The dramatic slow-mo cam that inches in on the final punchup should be in every fighter!

87

## METAL GEAR SOLID V: THE PHANTOM PAIN

RELEASED September 1, 2015

LAST POSITION 71 ▼

**Morgan:** This seven-year-old open-world stealth gem is starting to show its age, but the best bits of Metal Gear Solid V are still some of the best moments in the genre. Even the best immersive sims struggle to match The Phantom Pain's freeform approach to missions and huge variety of tools.

86

## FROSTPUNK

RELEASED 2018

LAST POSITION 71 ▼

**Sean:** In the often warm and cosy city-builder genre, Frostpunk is a shard of ice. You're not an omnipotent eye in the sky governing a faceless population; as you balance sacrifice and survival in a snow-strewn apocalypse, Frostpunk forces you to face the people, and ultimately be held extremely accountable.



85

## ALIEN ISOLATION

RELEASED 2014 | LAST POSITION 83 ▼

**Jody:** A cinephile's dream, recreating the look and sound of *Alien* with loving care. It's also a nightmare, recreating the xenomorph from gurgling growl to lashing tail and letting it loose to stalk you through (lovingly recreated) space station corridors.

If someone's not into strategy games I don't feel guilty convincing them to play one. When

people aren't into horror, it's usually with good reason. If you don't like being afraid you won't like *Alien Isolation*. It's terrifying. That said, if you enjoy the relief of triumphing over a boss in a *Souls*-like, think how relieved you'd feel confronting actual fear rather than some guy who transforms into a thing with long arms.



## 84 CONTROL

RELEASED 2019 | LAST POSITION New entry

**Robin:** The vibes are just impeccable. If you could distill *Control*'s weird, SCP-inspired atmosphere into a liquid, I'd drink a gallon. I love how much fun it is to move and fight through its bizarre, impossible spaces while soaking all that in.

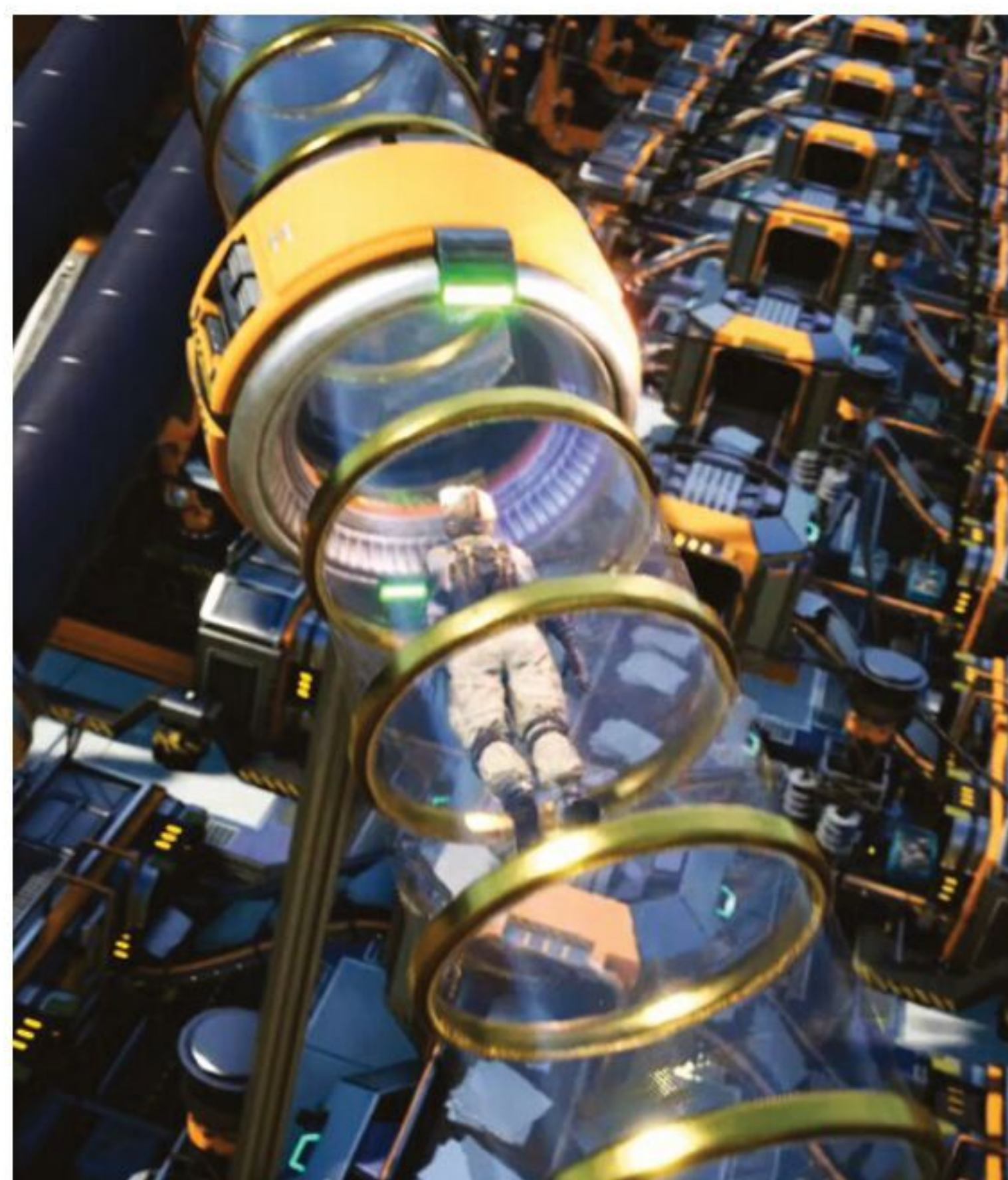
**Fraser:** It's brutalist architecture porn. And as striking as it is, boy does it have a glow up when you turn on ray-tracing. There are a lot of flat, reflective surfaces in the Oldest House, so it's a great showcase of those fancy reflections.

## 83 SATISFACTORY

RELEASED 2019 | LAST POSITION 50 ▼

**Wes:** In *Satisfactory* we built a power plant tower so tall you could see it from across the planet. We built factories with so many glass windows that even an RTX 3080 gave up on rendering them all. We connected conveyor belts carrying precious resources across the desert to a cargo train that spiralled up the side of a mountain. We built a mining facility so far away it needed aerial drones to collect its materials – even though we couldn't actually build drones yet.

*Satisfactory* begins as a game about optimisation, finding the most efficient ways to pump out resources. Master that, and you're left with a sandbox that rewards you for building however and wherever the hell you want, just for the satisfaction of it.





## PERSONAL PICK

*Sarah James*



## WORLD OF WARCRAFT

WOW hasn't had the best year but I can't help it – it's still my favourite MMO. Most of its troubles have been with overly-complex endgame power systems, but there's still nearly 18 years of content to explore, along with lore that spans back to the earlier games.



82

## RESIDENT EVIL VILLAGE

RELEASED 2021 | LAST POSITION 43 ▼

**Jody:** *Resident Evil* at its most decadent and gothic. There's a bit with a baby in a puppet house that's as scary as the series has ever been, a werewolf attack in the village that pays homage to *Resident Evil 4*'s early siege, and the vampire-haunted Castle Dimitrescu, which lives up to its reputation. Playing *RE8* a while after release, I didn't think Lady D could possibly be as cool as the hype around her suggested, but she absolutely was. And there are plenty of surprises after that, with plot twists I wasn't expecting, neat references to older games in the series, and a Mercenaries mode that's basically bullet heaven. The puzzle with

the sinking platforms on the lake is rubbish, though.

**Jacob:** If you're a new player looking for a good entry point into the *Resident Evil* series, *Village* is it. It's more run and gun than previous entries, but since it's a modern vision of *Resident Evil* it's not short of variety to keep gameplay interesting. You visit heaps of beautifully designed levels throughout the game, and each one offers a taste of everything *Resident Evil* has done well over the years. The story follows on from *Resident Evil 7*, so you may find you want to start there before hitting up *Village*, but it does a pretty good job of explaining what's going on.

## PERSONAL PICK

*Sean Martin*



## RAINWORLD

Everything in *Rainworld* tries to eat you and I kind of love that. The only tools the Slugcat has to survive these dystopian predators are your smarts, and that makes it both the weakest and the most deadly creature in the entire ecosystem. Also you can tame the lizards.



## 81 COUNTER-STRIKE: GLOBAL OFFENSIVE

RELEASED 2012 | LAST POSITION 37 ▼

**Rich:** As *CS:GO*'s Twitter bio says, this is "your favourite first person shooter's favourite first person shooter". Still attracting almost a million daily players, the biggest esports around, the best 5vs5 tactical shooter – and despite what some say, it still gets intermittent updates.

**Evan:** It's still the purest competitive FPS on PC, but waning in importance as the tail of battle royale and extraction shooters lengthens. I love *CS*, but I'd rather play *Hunt: Showdown* in 2022.

## 80 COMPANY OF HEROES 2

RELEASED 2013 | LAST POSITION 65 ▼

**Fraser:** There's understandably still a great deal of fondness for the original *Company of Heroes*, but with 2 the multiplayer really got to shine, leading to a much longer tail. And, honestly, I've had enough of the invasion of Normandy. The campaign has a lot to recommend it, too, if you don't mind the Russian cold, and is further elevated by the impressive non-linear *Ardennes Assault* expansion, paving the way for the impending *Company of Heroes 3* and its dynamic campaign.





### 79 PSYCHONAUTS 2

RELEASED 2021

LAST POSITION New entry

**Morgan:** *Psychonauts 2* is what happens when the brilliant folks at Double Fine get as much time and budget as they need to make a 3D platformer. This is a gorgeous sequel that picks up right where the first left off. A charming, heart-wrenching story through the lens of a 2005 collectathon platform game.

### 78 ANNO 1800

RELEASED 2019 | LAST POSITION 62 ▼

**Phil:** A city-builder about creating elaborate, automated production chains – ferrying myriad resources from across the world to turn into the goods your citizens crave. The cities you create will be ornate and beautiful, but the real joy is found in watching a successful, stable supply of sewing machines leave your heaving factories.

### 77 RIMWORLD

RELEASED 2013 | LAST POSITION New

**Evan:** Perhaps the best raw, customisable storytelling engine on this list, *RimWorld* is the progeny of hyper-granular colony sims like *Dwarf Fortress*. Your pet turkey can break bones (or lose their beak to frostbite in the winter after a specific level of cold exposure). It's also moddable as hell: I played 125 hours this year with a multiplayer add-on.



### 76 ARMA 3

RELEASED 2013 | LAST POSITION 69 ▼

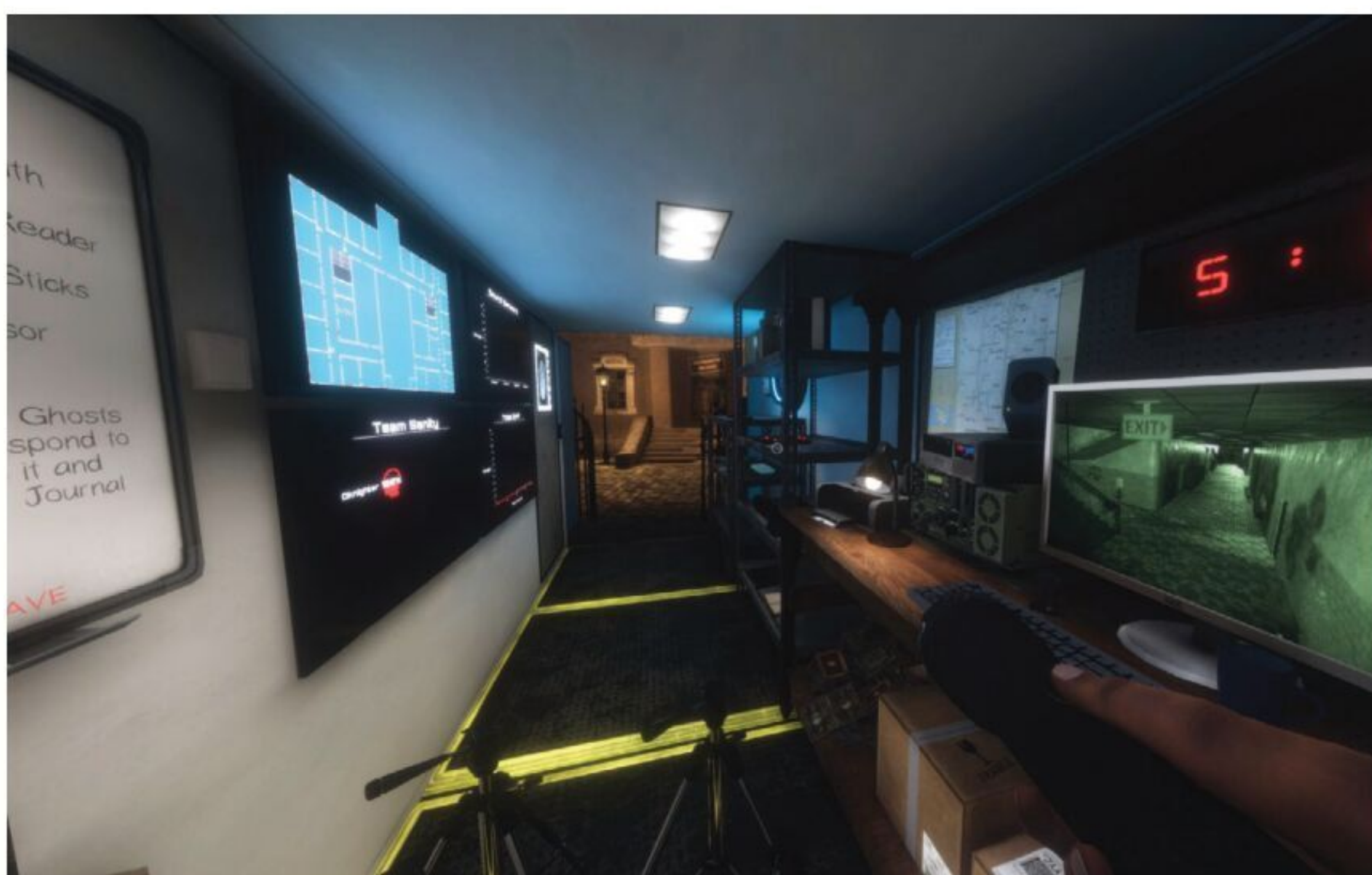
**Evan:** The launch of the Early Access *Arma Reforger* in May complicates this a bit: *Arma* is improving on its path to *Arma 4*, but slowly. For now, *Arma 3* is still my recommendation for a feature-complete military sandbox. The game continues to remind us that scale is one of the precious feelings games can give us. That doesn't just mean "big maps". Scale is as much about the absolute freedom players have to be a part of epic firefights in different, interconnected ways.

### 75 THE ELDER SCROLLS V: SKYRIM

RELEASED 2011 | LAST POSITION No change

**Robin:** I can't believe this is still on here. Both we and Bethesda need to let it go already.

**Jody:** I get it. I'd be tempted to replay *Morrowind* if I wanted a full playthrough of an *Elder Scrolls* RPG, yet I keep *Skyrim* installed and go back to look at mods. I've recently explored a cyberpunk city and begun a multi-part quest with fully voiced followers. *Skyrim's* alive, and people are doing more interesting things to it than most newer games.



### 74 PHASMOPHOBIA

RELEASED 2017 | LAST POSITION New entry

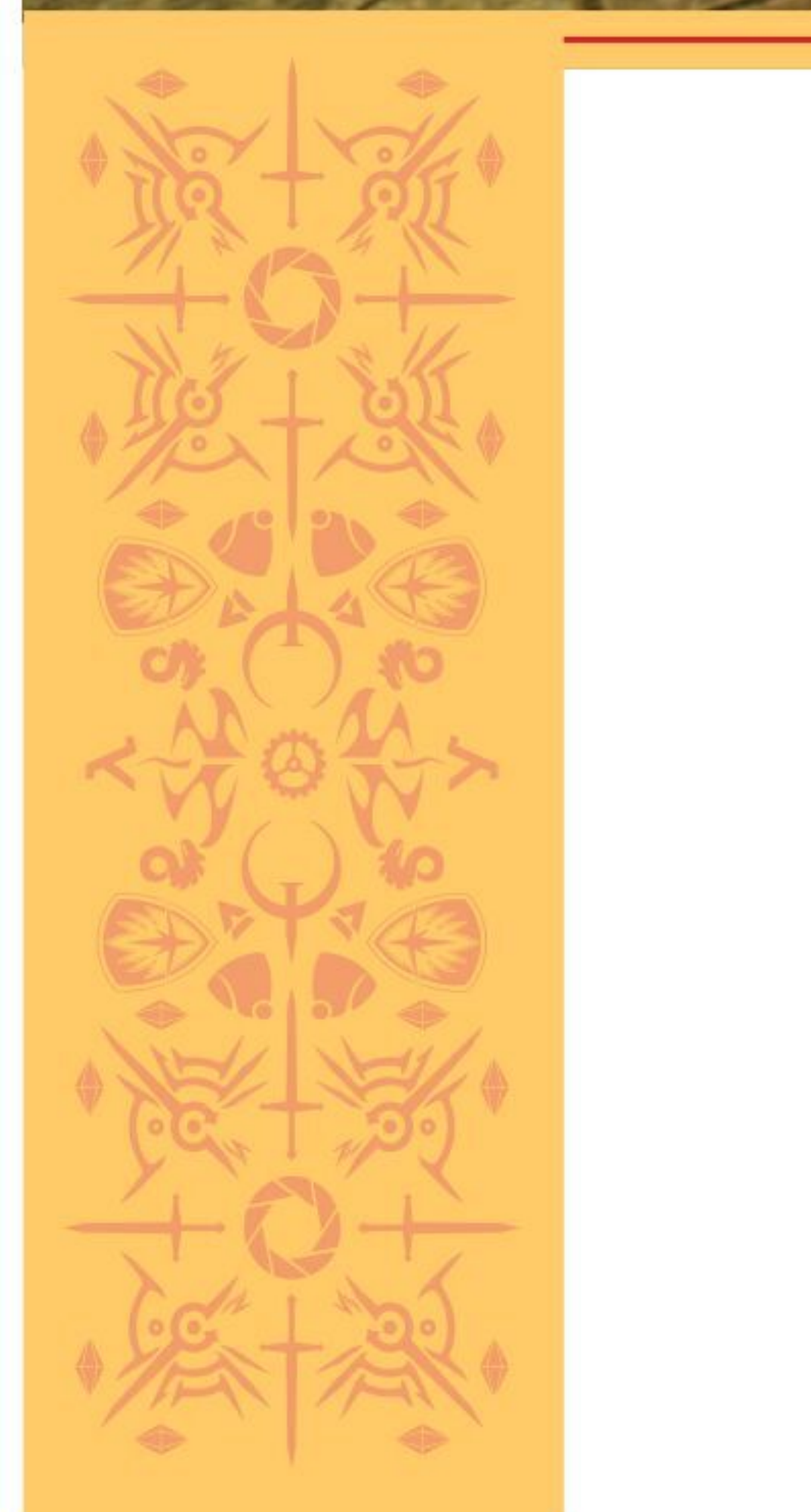
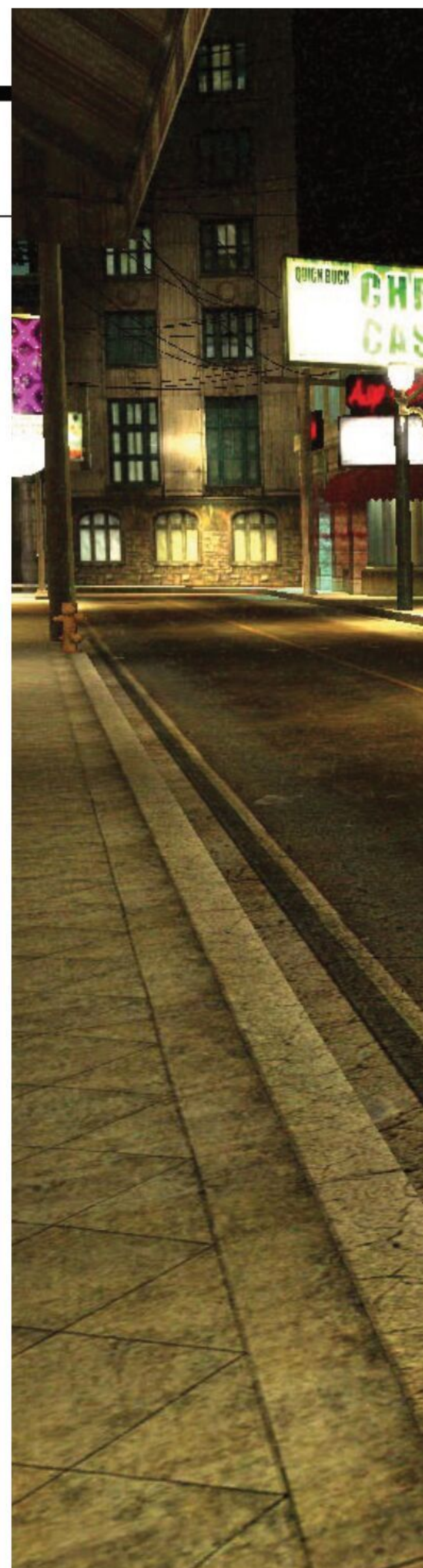
**Lauren Morton:** How does one bond with friends if not by stomping around a haunted house and wailing increasingly awful "where are you?" Blink-182 impressions at angry ghosts?

**Jacob:** I used to jump into *Phasmophobia* expecting to be terrified almost immediately, now I do it because it's a great social game to play with a handful of friends. Enjoying a stroll through an abandoned and potentially haunted campsite or prison is now my idea of a good time, just shooting the breeze and poking fun as we idly check for ghosts on our vast array of ghost hunting gear.

I love those moments simply tracking

spectres much that I've actually explored haunted castles (or those claiming to be haunted) with friends in real-life because of it. *Phasmophobia* made me realise I love the quirky ghost-hunting culture that I thought only existed in episodes of early 2000s British TV show *Most Haunted*; a world filled with EMF meters, spirit boxes, infrared thermometers, and 'I'd rather be ghost hunting' caps.

**Rich:** I return to *Phasmophobia* every few months with the same group, because it's always different. Yeah we've seen much of what the game has but its combinations, its capacity to shock you out of over-confidence, remains undimmed.





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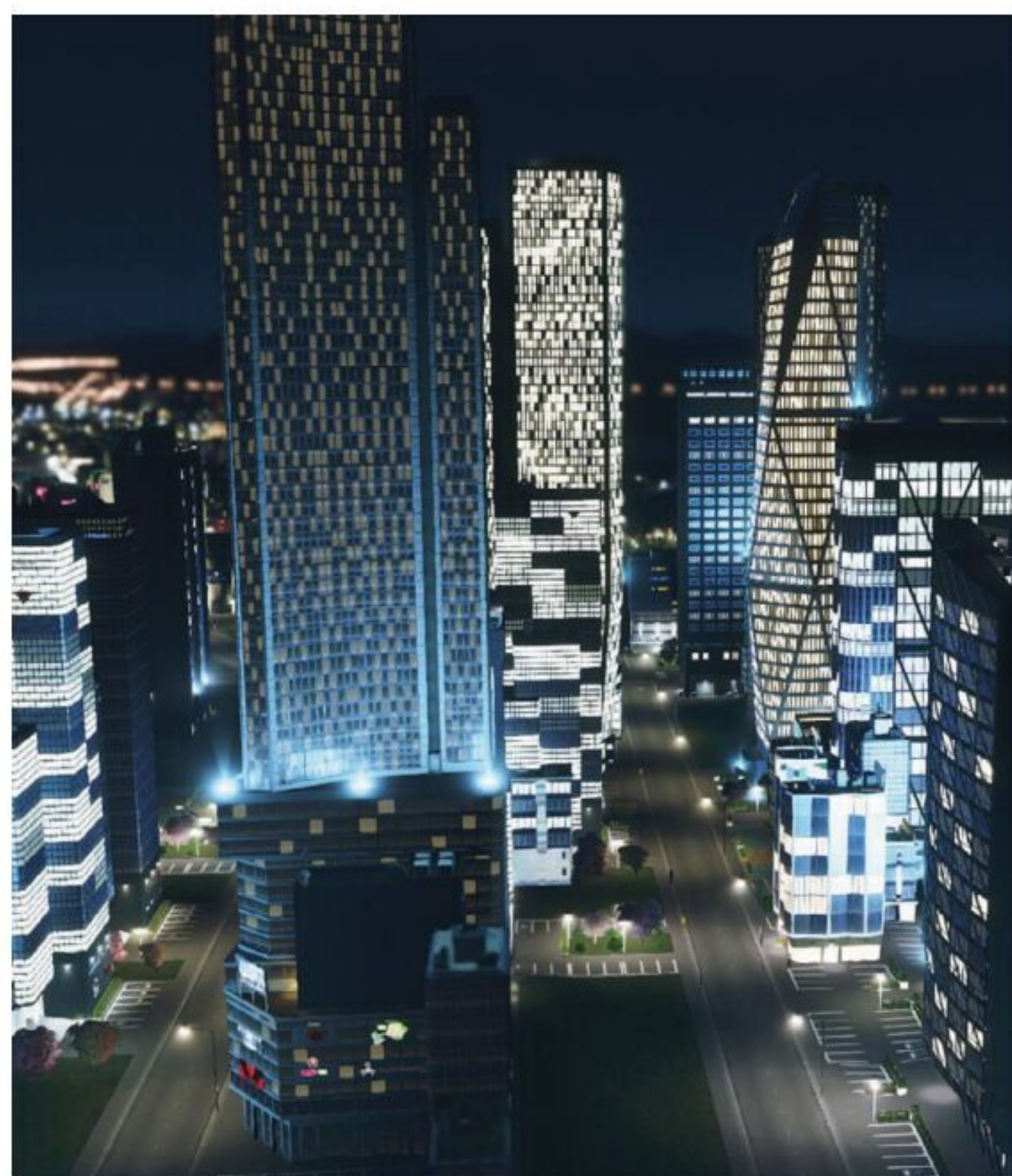
## VAMPIRE: THE MASQUERADE - BLOODLINES

RELEASED 2004 | LAST POSITION 93 ▲

**Jody:** *Bloodlines* remains an unbeatable example of a specific kind of RPG: one with sexy vampires you can kiss. It's got atmospheric urban hubs to explore, wonderfully animated NPCs, and a sudden switch to full horror that scared me shitless even on playthrough three.

The Unofficial Patch continues being updated long after fixing *Bloodlines'* biggest bugs. It even inserts shortcuts past combat-heavy areas, the main weak spot of a game otherwise happy to let you sneak, talk, or kiss your way out of problems.

Actually, I think kissing caused more problems than it solved.



## 72 CITIES: SKYLINES

RELEASED 2015 | LAST POSITION No change

**Katie:** Seven years is a long time for any game to stay relevant, but *Cities: Skylines* remains the (big) apple of my eye as one of the greatest city builders of all time. It's not moved in the top 100 list as we consider it truly representative of the genre, the pinnacle of traffic management and a well rounded city design sandbox.

The game's easy to pick up, and deep strategies reveal themselves as you learn to manage traffic flow, master road hierarchy, and exert your authority with evil cycle-to-work schemes. The fact there are still tons of active modders in the community today, and that Paradox is still releasing DLC packs, means there's a constant stream of content to keep you amused until they finally grace us with *Cities: Skylines 2*.



## 71 WARHAMMER: VERMINTIDE 2

RELEASED 2018 | LAST POSITION 77 ▲

**Sean:** *Vermintide 2* is the most down-to-earth Warhammer game. It's essentially about five roommates trying to deal with the end of the world. They drink together, bicker together, and yes, slaughter an endless number of humanoid rats together. In a setting rife with OP gods and champions, I love that it's about a bunch of misfits just trying their best.

**Robin:** It's got that wonderful humour and satire in the dialogue, but always against this absurdly grim, violent backdrop.



## PERSONAL PICK

Dave James



### OXENFREE

An always engaging surprise of an indie adventure game that draws you in with its dialogue and innate weirdness and will keep hold of you until the end. Whichever one you end up with. *Oxenfree's* simplicity means that it holds up as well today as it did when it released six years ago.

## PERSONAL PICK

Katie Wickens



### THE STANLEY PARABLE

There's a distinct lack of walking simulators on this list, which is kind of depressing. *The Stanley Parable* is one of the finest examples of branching narrative, and explores the concepts of free will and determinism in such an accessible way, it's hard to beat.



### 70 FARMING SIMULATOR 22

RELEASED 2021 | LAST POSITION New entry

**Chris:** For years I wondered what the appeal of a hardcore farming sim was, but then I spent a couple seasons ploughing, planting, cultivating, growing and harvesting. When my first crop of beets began pouring into my trailer – and I am not being sarcastic here – it was a genuine rush. The deep complexity of the systems and the exquisitely recreated farming vehicles, which to my mind are just as impressive as sci-fi spaceships, make it easy to turn farming into an obsession.

### 69 OLLIOLLI WORLD

RELEASED 2022 | LAST POSITION New entry

**Robin:** I genuinely had to uninstall this to make myself stop playing it, because I was in so deep I could feel it giving me RSI.

**Dave:** I fell in love with this game while I was reviewing the Steam Deck. It's the perfect pick up and play game for a handheld. It reminds me of the compulsive nature of *Trials 2*, where I would restart levels time after time and settle for nothing less than a clean run every time. It's the same thing with *OlliOlli World*, but with a more esoteric aesthetic.



### 68

## FOOTBALL MANAGER 2022

RELEASED November 8, 2021 | LAST POSITION 66

**Dave:** While *Football Manager 2022* absolutely is a management simulation of what it's like to control the finer points of a football team in modern times, it's also one of the most engaging RPGs around. Most people will simply dismiss the game as little more than a set of spreadsheets with no soul, but for the people for whom *FM* has become *the* game they play it means so much more than that.

A wider career can last for years, even decades, as you live a full life in football. And in that lifetime you can experience the many varied highs and lows of football; whether that's a last minute winner delivering an elusive Champions League

win, a courageous full-back declaring their sexuality to a packed press conference, a brilliant season pushing your tiny home team of Bath into the professional leagues, or the pain of relegation, sackings, and a son who turns out to be too rubbish a footballer to fit in with your team, so you have to destroy their career at the tender age of 21 with a cancelled contract.

It's also become a game I don't just play at my PC; I deliberate over transfer decisions in the shower in the morning, agonise over tactical tweaks long after I've shut down my rig from a bad run of matches, and dream of actually making it into the football league again.



67

# UNAVOWED

RELEASED 2018 | LAST POSITION No change

**Robin:** This game's such a vision for what point-and-click games could be today. Instead of nostalgia, it pulls in inspiration from Bioware and Telltale to craft a brilliantly textured narrative and world to go with its smart puzzles.

**Fraser:** Not just one of the best adventure games around, *Unavowed* is also a high point for urban fantasy. There are shades of Dresden Files and John Constantine, but this is a singular yarn, grounding the fire mages, ghost assistants and confused demons with human drama, and setting it in a version of New York that absolutely feels tangible. Designer Dave Gilbert loves this city and loves these characters, and that makes me love them too.



## 66 JACKBOX PARTY PACK 8

RELEASED 2021 | LAST POSITION New entry ▼

**Morgan:** Jackbox Games continues to demonstrate why it's the master of party games. You'd think eight games later these packs would be out of good ideas, but *Party Pack 8* features some of the cleverest games the series has ever seen, like a hidden drawing murder mystery game *Weapons Drawn* or a genius twist on *Family Feud* in *Poll Mine*. I especially love the creativity of *Job Job*, a game in which you write stories using word clouds written by each other.

**Imogen:** I wanted *Jackbox* to be kicked off this list in favour of *Gartic Phone*. Though it's unique and fun, it's the series that's good, not any one individual *Jackbox*. Whenever I've played *Jackbox* with friends, I've needed to boot up multiple entries to enjoy the night to the fullest.



## 65 GUARDIANS OF THE GALAXY

RELEASED 2021 | LAST POSITION New entry

**Morgan:** This gorgeous, well-written, and downright fun story didn't get the love it truly deserved across the internet last year. Yes, the combat is simple, but Square Enix Montreal's take on the *Guardians of the Galaxy* demonstrates a lot of love for the source material and a high bar of comedy that I wouldn't have expected from the *Deus Ex* studio. The characters are so good, this game made me like the Marvel movies a lot less. Give it a shot.



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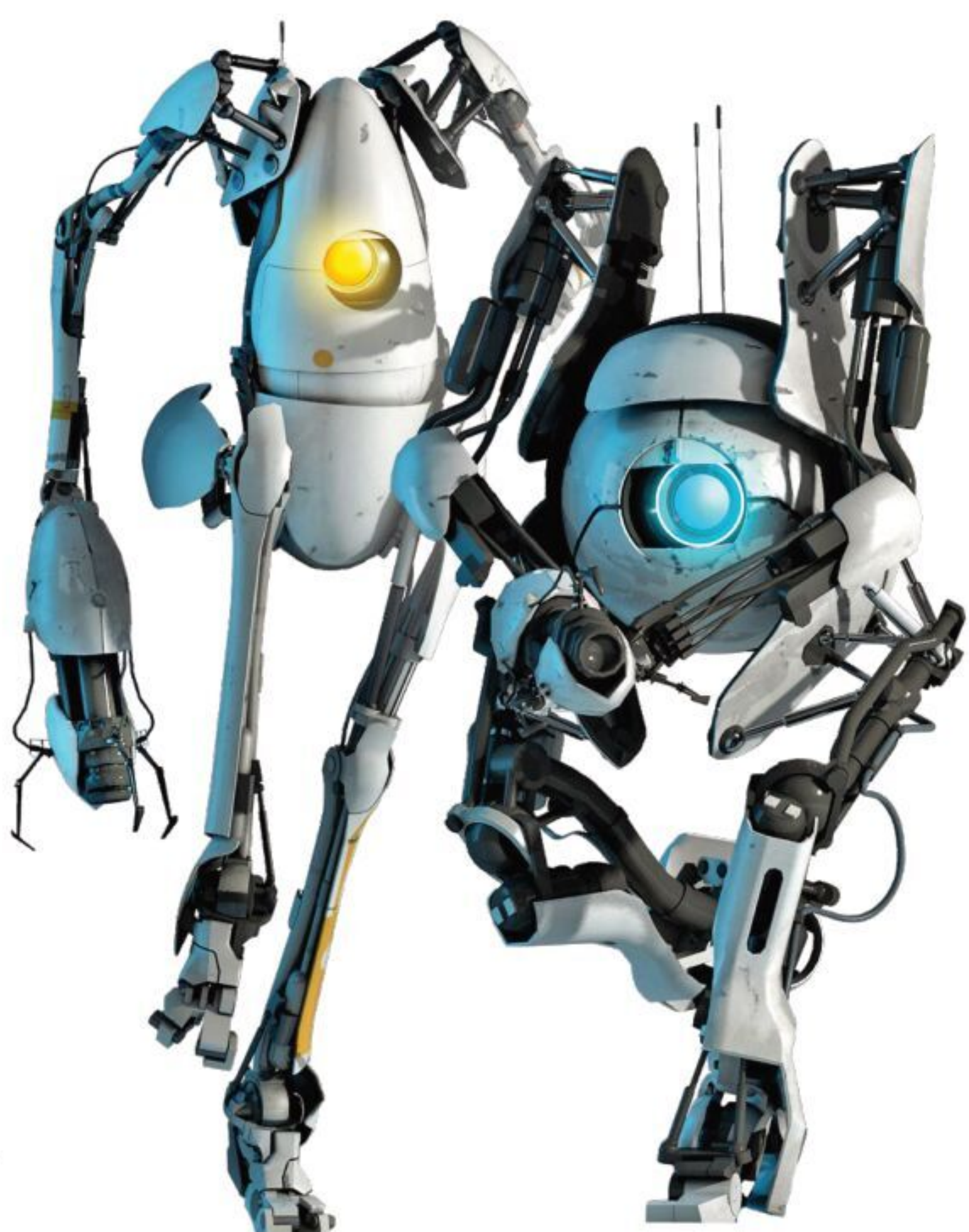
64

## CARD SHARK

RELEASED 2022 | LAST POSITION New entry

**Fraser:** I'm terrible at cards and even worse at sleight of hand, but *Card Shark* makes me feel like a master. As the mute apprentice of Comte de Saint-Germain, I've learned a lot about how to part 18th-century French nobles and revolutionaries from their cash. The mechanics of deceit are both complex and compelling, embracing the tactile nature of card games and then layering oodles of intrigue and a nice big conspiracy on top.

I finished the whole thing in a single long afternoon, but I've hardly stopped thinking about it since. I even picked up a real deck of cards to see if the game rubbed off on me, but no, I've still got the dexterity and wits of a sloth.



## 63 PORTAL 2

RELEASED 2011 | LAST POSITION No change

**Wes:** Surely you've heard of Valve's FPS puzzle comedy *Portal* and its sequel, which will make you laugh and feel incredibly smart at the same time. I'm going to assume you've played the campaign, because you strike me as a reader of fine taste and culture. What really keeps *Portal 2* on the Top 100 year after year is its co-op campaign and staggering Steam Workshop scene, providing effectively infinite test chambers to solve. Play nothing but *Portal 2* and *Kerbal Space Program* for the next year and you could probably earn an honorary physics degree.

**Nat:** It's so easy to forget how Valve's writing was on top of its game in 2011. Razor sharp and effortlessly funny, even without memetic cake jokes.

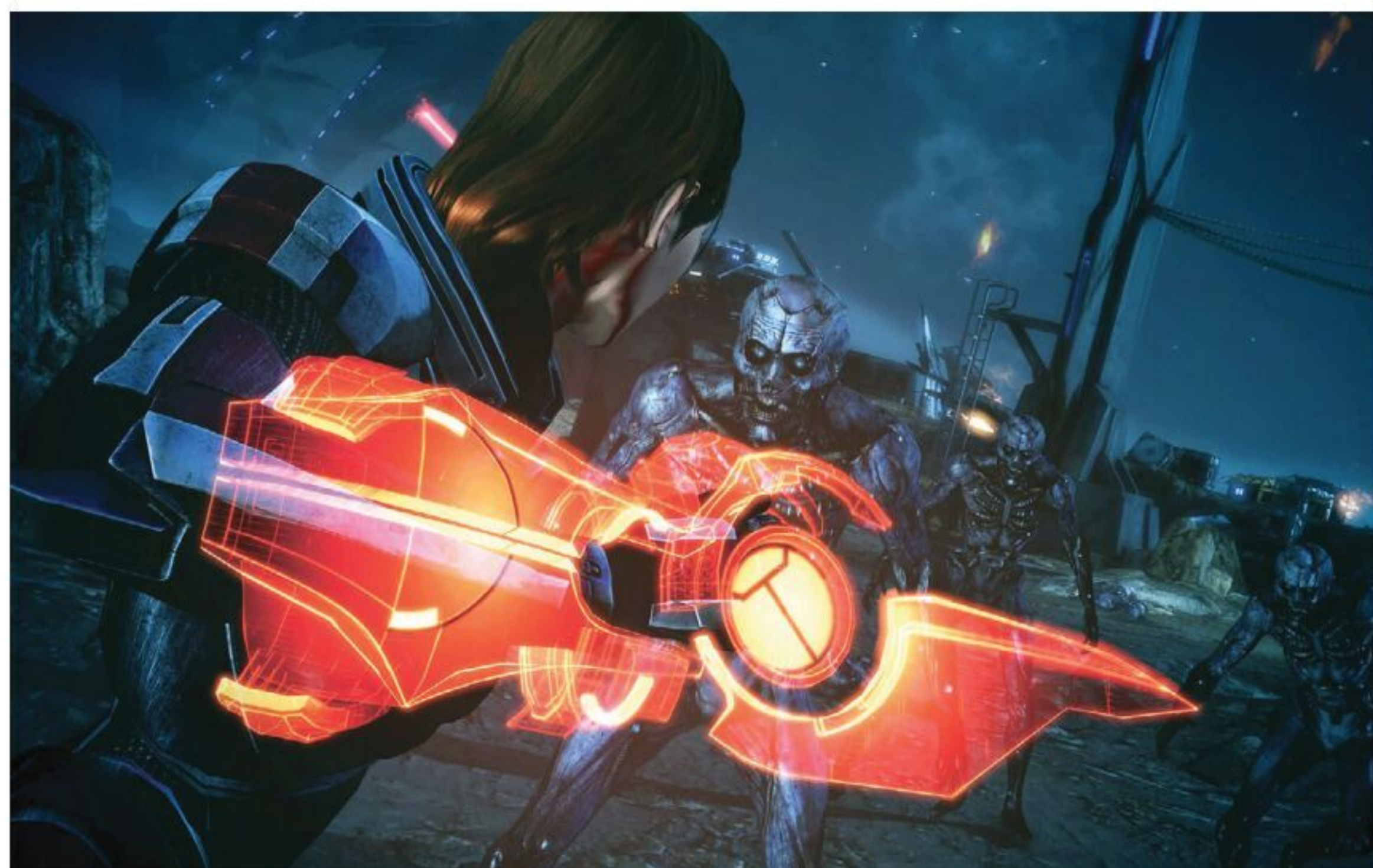


## 62 MICROSOFT FLIGHT SIMULATOR

RELEASED 2021 | LAST POSITION New entry

**Nat:** As far back as I remember, I'd always written off *Microsoft Flight Simulator* as this stodgy old thing, something dads fuss over on their yellowed old CRT in the corner of the garage. But a 1:1 scale model of the Earth is a hell of a thing, and with a flight model that can be as accessible or as finicky as you like, I've found endless joy in even the familiar drudgery of a Edinburgh to London flight – especially if I'm doing it in the *Halo Pelican*.





## 61 MASS EFFECT LEGENDARY EDITION

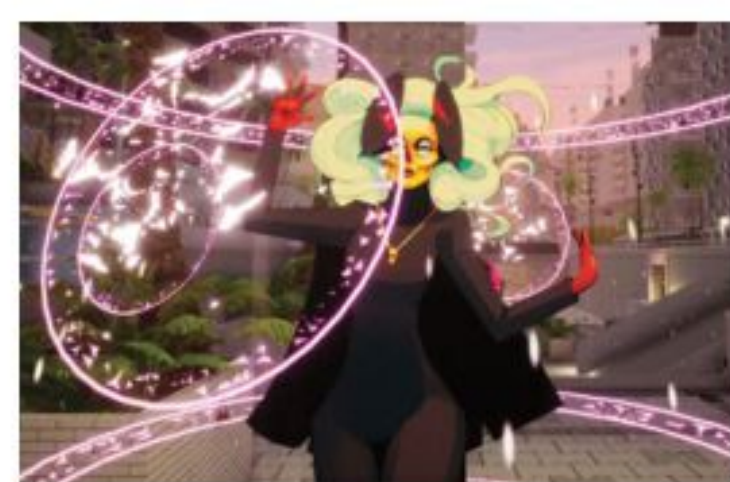
RELEASED 2021 | LAST POSITION 91 ▲

**Jody:** So many space games are about being a pilot or the spaceship itself. *Mass Effect* understood we wanted to be the ship's captain, just like on TV. The one who bosses people around, gives inspiring speeches, leads the away team, plots the journey, and, yes, macks on blue aliens.

**Imogen:** *Mass Effect* is two of my favourite aspects of games rolled into one. Stupid otherworldly politics that make no sense and gun action. Oh and my third favourite too, smooching aliens. The point is *Mass Effect* games showed me how deep relationships can go in games whether

they be platonic, intergalactic, or romantic. Nothing has ever made me feel the same as realising the consequences of the suicide run or saying goodbye to Tali.

**Ted:** I often find myself ragging on *Mass Effect*, its militarism, the way it ended, the questionable ethics of its workplace romances. But at the end of the day I replay the whole trilogy at least once every two years. It's a touchstone for me, a world I'm always happy to go back to. It also doesn't hurt that the Vanguard class lets you teleport around shotgunning dudes in the most satisfying way imaginable.



## 60 PARADISE KILLER

RELEASED 2020 | LAST POSITION 59 ▼

**Morgan:** A murder mystery visual novel set in a twisted vision of heaven. The pitch was enough for me to try *Paradise Killer*, but what kept me around is the unique approach to its central mystery, allowing players to track each citizen's timelines, solve puzzles out of order, and make your own conclusions about whodunnit. It's pretty serious business wrapped in a completely absurd world, with memorable characters like Lady Love Dies, Dr Doom Jazz, and The Witness To The End.

## 59 PATH OF EXILE

RELEASED 2013 | LAST POSITION 54 ▼

**Fraser:** After nearly a decade, no ARPG has managed to grip me like *Path of Exile* and its incredible, labyrinthine passive skill tree. And with every new expansion and league, it subtly reinvents itself, beckoning me back. There are always new builds to experiment with. New challenges to overcome. *Path of Exile 2* is coming, but I'm in no particular rush to move on.

**Jody:** If you find *Path of Exile* a bit murky and boring-looking, may I recommend the vibrant MMO/ARPG *Lost Ark*?



## 58 SEKIRO: SHADOWS DIE TWICE

RELEASED 2019 | LAST POSITION 53 ▼

**Wes:** I put 120 hours into *Elden Ring* this year, yet it's *Sekiro* I think about most. It's FromSoft's tightest game: all action, no RPG fat, 10,000 blood-spurting death blows standing between you and victory. Is there a Louvre for ninjas?

**Sean:** *Sekiro* did for me what all of Soulsborne could not: it made parrying fun.

## 57 ASSASSIN'S CREED VALHALLA

RELEASED 2020

LAST POSITION 52 ▼

**Lauren A:** *Valhalla* is the least *Assassin's Creed*-y game in the franchise, making it the best of all. It should definitely be higher up in this list because who doesn't love roleplaying as a sexy Viking lady with a big hammer? The DLC turn *Valhalla* from a regular Viking adventure into a mythical masterpiece as you smash enemies to bits.

## 56 UNPACKING

RELEASED 2021 | LAST POSITION New

**Mollie:** A zen puzzler with very few words, yet which says so much through the possessions you neatly stow away inside cupboards and wardrobes across multiple years and living spaces.

**Jody:** Every object clicks in place delightfully, telling a story while it does. But the partner who doesn't leave wallspace for your degree, aaargh.





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## PREY

RELEASED 2017 | LAST POSITION No change ▲

**Morgan:** *Prey* is everything great about immersive sims crammed into one huge space station. It's got wrenches, shotguns, computers with mouse pointers, and a set of systemic rules that everything follows. I'll never forget the first time I bypassed a locked door by sniping a button with a Nerf crossbow. This is Arkane's grand homage to *System Shock* and I'm still amazed it turned out so good.

**Jody:** This is the direction I want immersive sims to go. A singular location modelled down to the tiny, characterful details. Talos I is a lonely place, perfect for sci-fi horror, but you get to know its people through the things you find, even character sheets from their roleplaying game.



## 54 THE SIMS 4

RELEASED 2014 | LAST POSITION 42 ▼

**Lauren M:** Every one of us who enjoys *The Sims 4* is eagerly awaiting the day it has legitimate competition. Until that happens, it's still genuinely the only game filling the ongoing demand for building dream homes and simulating wacky families. Plus I can be a werewolf living in a cottage now.

**Mollie:** My love-hate relationship with *The Sims 4* continues. There's still nothing quite like it, but I struggle to recommend a game that requires remortgaging your house to experience fully.

## 53 CHIVALRY 2

RELEASED 2021 | LAST POSITION 58 ▲

**Tyler W:** *Chivalry 2* wouldn't work if its combat design weren't so clever. The complex blocking, riposting, and countering system creates the possibility for skilled players to enter into a multiplayer swordfight outnumbered and win, which is brilliant. At the same time, a lot of *Chiv 2*'s fun purely comes down to the volume of janky, farcical ways to beat other players.

Thus the medieval warfare game charged a few yards up the list this year thanks to its Steam release and a big update which added two new objective maps and, most importantly, horses. I've already commended *Chiv 2*'s jousting in detail elsewhere in this magazine, but the gist is that galloping around with a pointy stick is as fun as it sounds like it would be.







## PERSONAL PICK

*Ted Litchfield*



## DREAD DELUSION

This Early Access RPG sees you exploring a civilisation clinging to the asteroids orbiting a constellation of neutron stars. Its open-ended exploration hooked me, but the high-concept writing of the *Planescape: Torment* school really blew me away.

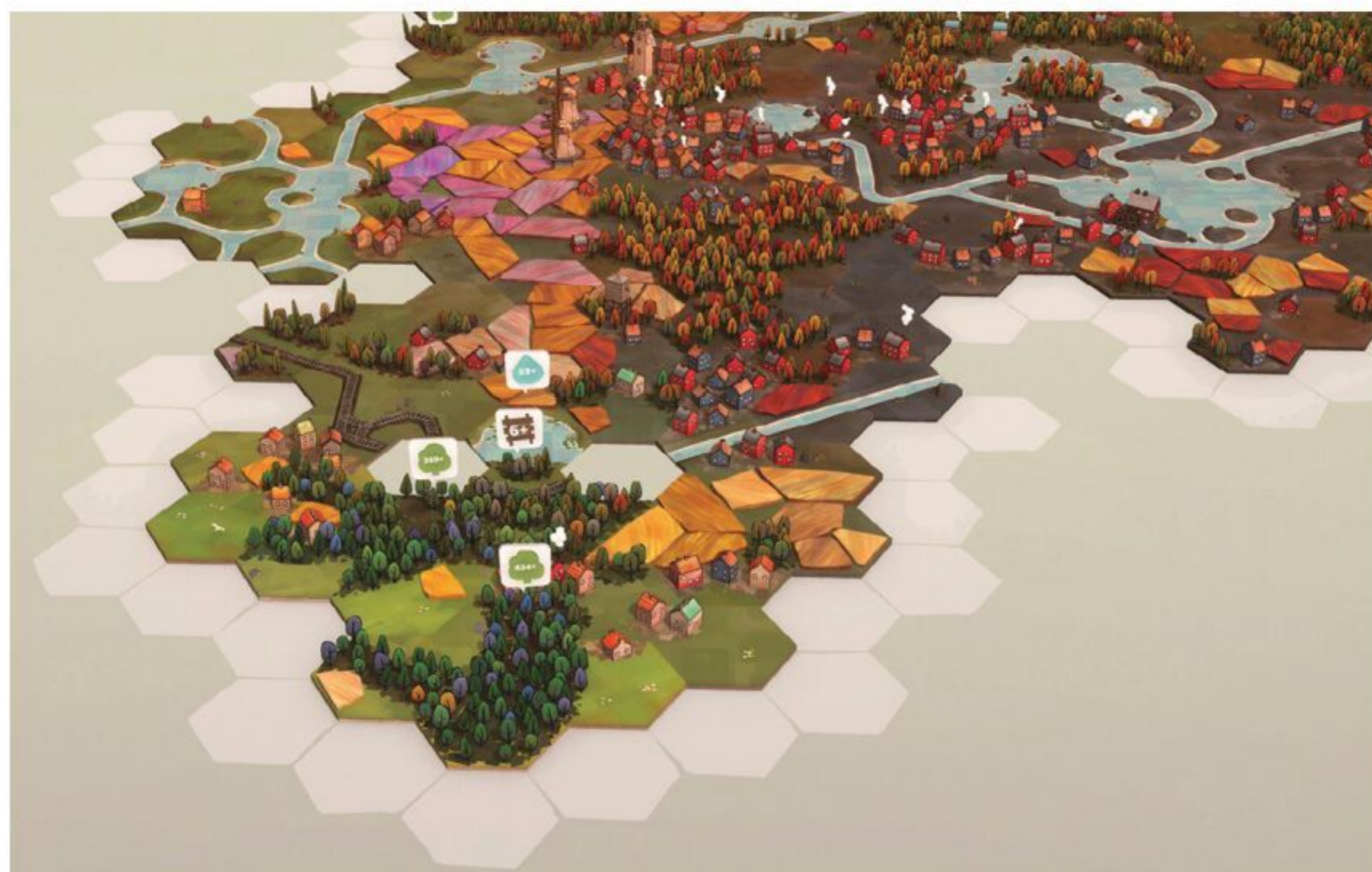
## PERSONAL PICK

*Chris Livingston*



## WEST OF LOATHING

An open world Wild West RPG filled with evil cattle, ghost pickles, and most importantly, more jokes per minute than any other game, ever. Long after I'd finished the main story I unravelled a surprisingly deep mystery while looking for (and finding) more laughs.



## 52 DORF FROM ANTIK

RELEASED 2021 | LAST POSITION New entry

**Robin:** One of the things I love most about *Dorf from Antik* is that it is fundamentally aimless. As you build up your little slice of countryside one tile at a time, trying to match up elements like fields, rivers, and railways, you're not trying to exploit the landscape or build a map-conquering empire; you're not recruiting an army to conquer your enemies; you're not even really trying to complete an over-arching goal, most of the time, other than just a good score and a pleasing layout. You're basically just quietly piecing together a place that would be quite nice to go on holiday to. There's a satisfaction to placing pieces in the best, highest-scoring ways,

but really for me it's subsumed by the satisfaction of this lovely field all fitting together just right inside this perfect loop of river. It's one of the best mindfulness tools I've ever used.

Which is perhaps a sign that I should just get into model railways.

**Katie:** Everyone keeps telling me this game is super chill, but it kind of stresses me out. I think it's down to the fact I'm always having to shift my attention to the other side of the map where some forest or village needs completing. It's not even timed, but it forces me to go against my mother's wisdom: "Finish one thing before you start another."



## 51 RAINBOW SIX SIEGE

RELEASED 2015 | LAST POSITION 21 ▼

**Nat:** *Rainbow Six Siege* isn't my go-to shooter (see no. 4 for that). But it's the best take on a slower, more tactical kind of shooter – a more bombastic *Counter-Strike* where positioning is key, kills are quick, and every single wall can come crashing down at a moment's notice. Plus, while the launch lineup was a fairly dull roster of masked CS:GO rejects, *Siege*'s operators have only gotten cooler, gayer and more mechanically bizarre as the game continues to grow.

## 50 HARDSPACE: SHIPBREAKER

RELEASED 2020 | LAST POSITION New entry

**Jorge:** The thing about *Hardspace: Shipbreaker* that I love is how fast it can escalate at any given moment. One minute you're skilfully cutting apart a ship and making some serious cash then, oops, who put that fuel line there? It's a game that loves putting you under pressure. Death isn't a big deal because you're a replaceable clone. And sometimes clones accidentally blow themselves up. Work in the future is hard to come by, I guess.





### 49 KERBAL SPACE PROGRAM

RELEASED 2011  
LAST POSITION No change

**Dave:** It would be easy to dismiss this 11-year-old space sim. But there are so many layers to *KSP*, so much charm, and so many tricky, varied challenges, that it's still absolutely worth playing.

The rewarding career mode, and addictive physics-based difficulty make it a game I will always have installed on my PC.

### 48 SPELUNKY 2

RELEASED 2020  
LAST POSITION No change

**Evan:** Its procedurally-generated environments and slippery physics are a brutal combination, but *Spelunky 2*'s unfair deaths are balanced by moments of wonder as you dig through the Moon. Get knocked into a lava pit by baby Draculas on one run, discover the secret passage to an alien mothership on the next.

### 47 IT TAKES TWO

RELEASED 2021  
LAST POSITION New entry

**Imogen:** *It Takes Two* is a co-op adventure in which a divorce-bound couple's kid accidentally turns them into toys. The story is nothing special – and I hate that damn thrusting, gyrating book – but *It Takes Two* has some of the best platforming we've ever seen so it deserves this spot. That poor elephant though...



### 46 FORZA HORIZON 5

RELEASED 2021 | LAST POSITION New entry

**Jacob:** We've left the rainy coastline of Britain and flown halfway across the world for the next stop in the *Forza Horizon* series. The bright sunshine and varied landscape of Mexico makes for an excellent playground to burn up rubber in, and there's no shortage of excellent cars to take for a spin in what has to be *Forza*'s finest and most fun Horizon fest to date. Just try and take it easy on the anime car decals, yeah?

**Phil:** Have you been spying on me?

### 45 HALF-LIFE: ALYX

RELEASED 2020 | LAST POSITION No change

**Dave:** That liquid shader and Jeff... *Alyx* is easily the best VR game and one of the best *Half-Life* games.

**Chris L:** Despite being wedged in the middle of an established timeline, *Alyx* managed to take some surprising turns and contain some, ahem, full-life consequences for *Half-Life* lore. And I've never played a VR game that felt so completely comfortable and natural to move around in that I was able to keep my headset on for hours at a time.



### 44 ROCKET LEAGUE

RELEASED 2015 | LAST POSITION 27 ▼

**Tyler W:** Early in this year's Top 100 meeting I said that I'd deal with it if the rest of the staff decided to bump *Rocket League* off the list to make room for something new. After all, what more can I say about a multiplayer game that doesn't need any more iteration to be fun forever?

I've been writing about how Psyonix's car-football game is great for seven years now, and it continues to be great, but I have no notes. Not any that relate to the fundamental design of *Rocket League*, at least; as much as I've probably blamed 'the physics' for bad nights, I wouldn't change a thing about the weird, ultra-challenging way the rocket-powered cars handle. The

more I thought about *Rocket League* and all the good times I've had over the course of my thousand-plus hours, the more I resented my past self for being so deferential. No *Witcher 3* fans are shoving it out of the top 10 (spoiler) just because we've spent the past seven years saying that it's good, so why should I let a game I once called "the only good videogame" be cut?

I'm glad that Rich, PC Gamer's other primary *Rocket League*-liker, kept his guard up and it only ended up moving 17 places. I know it isn't traditional to say this unsarcastically, but what a save!



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## KENTUCKY ROUTE ZERO

RELEASED 2013 | LAST POSITION 35

**Tyler C:** Playing *Kentucky Route Zero* must be what it's like to experience ASMR. It's a tingly, intimate adventure game about the rot of capitalism that slips into the deepest parts of my brain and whispers to me that, despite everything, maybe it'll be okay.

**Nat:** A haunting tale of American decline that seamlessly traverses adventure game, text adventure, amateur stage play and dive bar gig. *Kentucky Route Zero* is a literary experience rivalled only by the likes of *Disco Elysium*, one less constrained by the look and shape of what a 'game' is supposed to be – especially when it comes to between-act interludes. Play it with the lights dimmed, and a heart open to some literary melancholy.



## 42 QUAKE REMASTERED

RELEASED 2022 | LAST POSITION New entry

**Wes:** Groundbreaking FPS, Romero's last game at id, grandfather of esports, progenitor of the rocket jump, yada yada yada. *Quake* could live in the Top 100 forever, honestly, but it's back for an especially good reason this year: Nightdive's 2021 remaster, which makes it absolutely sing on modern PCs. No more digging around folders to configure one of the dozen confusing *Quake* source ports: you can just boot it, crank your framerate to 144, tweak your FOV, and be off and running. *Quake Remastered* also includes some entirely new stuff: *Wolfenstein: The New Order* developer MachineGames built two expansions that dwarf the scale and intricacy of the original game, riffing on '90s level design after 25 years of study. A+.



## 41 HADES

RELEASED 2020 | LAST POSITION No change

**Jody:** Supergiant's a consistent studio with a string of bangers to its name. *Hades*' combat is frenetic, varying with loadout but usually built around using a perfect-feeling dash to get yourself both out of and into danger. The story's just as engaging, taking the obscure son of the god of the underworld and making his quest to escape into a sexy soap opera.

**Imogen:** *Hades* is hot. Hot action, hot setting, hot characters, hot dialogue. What's not to like?



## PERSONAL PICK

**Jody Macgregor**



### QUEST FOR GLORY 2: TRIAL BY FIRE

The *Quest for Glory* series combines puzzling and questing. When you've had enough of one you bounce to the other. My favourite's *Trial by Fire*, with its Arabian Nights theme and goofy references to the Marx Brothers and Casablanca.

## PERSONAL PICK

**Robin Valentine**



### LEGENDS OF RUNETERRA

As the best ever online CCG sadly leaves the Top 100 this year, I must ensure it is not forgotten. Its combo of a generous free-to-play model, tense matches, and well-maintained meta make it perfect for rescuing your friends from *Hearthstone*.



### 40 BATTLETECH

RELEASED 2018 | LAST POSITION No change

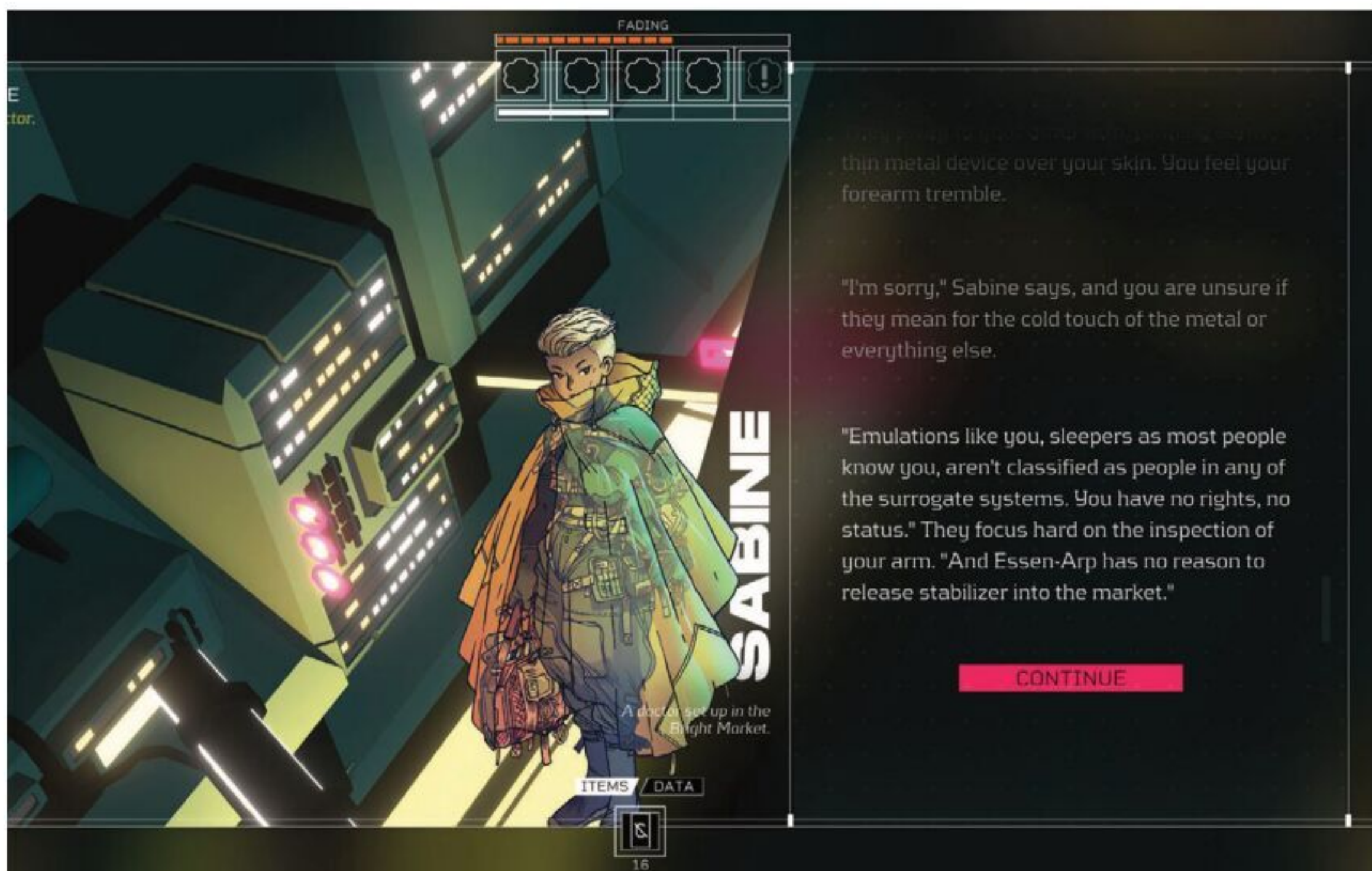
**Nat:** Harebrained Schemes' riff on Battletech is proof that the stodgy old wargame could be brilliant. It's a turn-based strategy that hides the fussy dice-rolls of the tabletop game without losing their complexity.

**Jorge:** *Battletech* is one of those strategy games I can play all the time. Career mode lets your mercenary troupe take jobs all over the star system in any way you want for fame and profit. If you love mechs and strategy, *Battletech* is a no-brainer.

### 39 INTO THE BREACH

RELEASED 2018 | LAST POSITION 25 ▼

**Robin:** I really think this is as tight and focused as turn-based strategy has ever been. Every level is an exquisite, satisfying puzzle, with the roguelike structure adding enough weight and drama to make you agonise over every move. When I first saw that this was still on our list, part of me thought, 'Has it had its day?' But the truth is I don't think anyone's even come close to making something as brilliantly precise in the time since.



### 38 CITIZEN SLEEPER

RELEASED 2022 | LAST POSITION New entry

**Jody:** A synthetic being on the run, you pretend to be an ordinary citizen of Erlin's Eye station by spending a pool of dice each day on activities like working shifts at a dive bar, tending a garden, or hacking security systems. Meanwhile, your artificial body's condition decays and your planned obsolescence draws closer. So do the hunters who want to drag you back to the corporation that technically still owns you. There are more pleasant timers too: as you make friends their stories unfold, a new chapter arriving every few cycles.

Keeping track of all this can feel almost like a job, but really what it adds up to is a full life. One with danger and compromise,

but also companionship and inspiration. The blimps in *Blade Runner* say a new life awaits you in the off-world colonies, and in *Citizen Sleeper* that's true.

**Wes:** The lovely character illustrations really pulled me into the lives of everyone I met, and the writing took it from there. I expected the dice rolls to be tedious additions to a visual novel, but they end up essential to *Citizen Sleeper*'s vibe. As your body breaks down you have fewer dice to work with, so I had my heart in my throat more than once on a dangerous job. The dice add tension to each early decision, and a gratifying sense of having 'made it' as life slowly gets easier.





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## NIER: AUTOMATA

RELEASED 2017 | LAST POSITION No change

**Ted:** This existentialist sci-fi ARPG's runaway success turned its creator, the masked weirdo Yoko Taro, into a gaming icon, but I remember my feeling of shock and euphoria when I discovered it was being made at all. Poor sales on the first *Nier* caused developer Cavia to shutter, and it's a small miracle we got this mind-melting masterpiece of androids duking it out at the edge of history.

**Mollie:** One of those games I wish I could experience again for the first time. Gorgeous and emotionally charged with some of the best damn combat I've ever had the pleasure of experiencing. Bless Yoko Taro for bringing 2B into this world.

**Wes:** What other game will let you commit suicide by eating a fish?



## 36 RETURN OF THE OBRA DINN

RELEASED 2018 | LAST POSITION No change

**Wes:** How the hell did one-man developer Lucas Pope decide that unravelling the mysterious fate of a 19th century ship and its dead crew using a magic pocket watch would make for a brilliant puzzle game? Lucas, if you're reading, would you trade brains with me? Mine's only lightly used, but it does come with priceless memories of the 12 hours it took me to learn what happened to every sailor on this damned vessel.

**Chris L:** It's refreshing (and risky) for a game to trust the player as much as *Return of the Obra Dinn* does, but by giving me the absolute minimum of help to untangle a bunch of interwoven mysteries, it meant that each time I solved one I felt like a genius. A unique detective game.



## 35 GUILD WARS 2

RELEASED 2012 | LAST POSITION New entry

**Lauren:** Somehow, it was an MMO that finally made me into a better platformer. Never mind the excellent living story, PvP, and top-tier in-game holidays. I love jumping puzzles.

**Phil:** I tolerate jumping puzzles, but I love *Guild Wars 2*. As someone who dips in and out of games erratically, and *always* forgets to cancel an MMO subscription in time, *Guild Wars 2* has been a blessing. No subscription, and its expansions don't invalidate gear and skills I earned before.



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## OLD WORLD

RELEASED 2020 | LAST POSITION No change

**Fraser:** *Civilization* might still be the biggest name in historical 4Xs, but *Old World* will make you forget all about it. Mohawk Games' ancient world strategy romp is a special concoction, splicing turn-based conquest and expansion with personal diplomacy, intrigue and heaps of drama. It's *Civ* for fans of *Crusader Kings*, and the kind of game I dreamed of but never thought would appear. It's

people, not nations, that move this epic forwards. Stepping out on their spouses, murdering their siblings, building cults – they're a busy bunch. And by limiting it to the ancient world, Mohawk gives these characters room to grow, instead of skipping a century in the blink of an eye. After all this soapy drama, it's hard to go back to *Civ*'s comparatively plain immortal rulers.



## 33 HALO: THE MASTER CHIEF COLLECTION

RELEASED 2019 | LAST POSITION 22 ▼

**Nat:** *Halo Infinite* was, unfortunately, a bit of a bust. But who needs Master Chief's flawed open-world outing when the MCC is right here, a perfect package of four all-time great FPS campaigns (plus *Halo 4*), with the ability to hop between the multiplayer offerings for each at will.

While the seasonal updates have ceased, the game continues to receive cosmetics and playlist updates every now and again – and with full mod support for the first three games, the MCC will likely continue to shape and reshape what *Halo* on PC looks like for years to come. *Halo Infinite*? Never heard of it.

**Dave:** *Halo*? Yawn.

**Wes:** After the tyranny of Xbox Live's rigid playlists, I love being able to just click 'CTF.' That's peak *Halo*.



## 32 VALORANT

RELEASED 2020 | LAST POSITION 79 ▲

**Imogen:** Another year, another jump up the list for *Valorant*. Riot Games' delve into low time-to-kill, ability supported FPS mayhem is going from strength to strength, and the game keeps growing and improving at an astonishing rate. What makes *Valorant* special isn't just its cast, balancing, maps, or visuals, it's Riot's dedication to supporting the game with players in mind. Never have I played a game with such a continuous rolling meta, and it keeps *Valorant* exciting.





## 28 FORTNITE

RELEASED 2017  
LAST POSITION New entry

**Jorge:** I can't believe I'm saying this, but, I'm a *Fortnite* guy now. No Build Mode has made *Fortnite* more approachable and frankly more fun than ever before. Big epic events keep things fresh, and are a reason to pick up a battle pass. Also it's the only game where you can play as Batman beating up Dr Strange with a lightsaber.

## 31 DESTINY 2

RELEASED 2017 | LAST POSITION No change

**Sean:** *Destiny 2* still feels so fluent as a shooter to me: the way that its movement, weapons, and supers combine to create such an audacious style of gameplay in both PvE and multiplayer. It can't help but feel like the evolution of what I loved in the original *Halo* games, and that's an ongoing experiment I want to be part of.

**Phil:** 'Experiment' is the right way to describe it. Over the years, Bungie has completely changed the cadence and content of its seasons, had multiple different systems for its guns, and now even removes older campaigns and activities in order to prioritise the new. There's still not an obvious map for how a

live-service game should operate, and Bungie's never been afraid of taking a shot in the dark – for better and worse.

Nevertheless, *Destiny 2* is broadly in a good place right now. This year's expansion, *The Witch Queen*, added the best campaign in the series' history – filling it with exciting encounters that build on the already strong foundation of its movement, gunplay and space magic. But as good as the campaign is, the real joy comes after – in raids and dungeons that feature some of the smartest and most exciting FPS encounter design that you'll find. Last Wish lets you fight a dragon. It's wild.

## 27 OUTER WILDS

RELEASED 2019 | LAST POSITION 15 ▼

**Phil:** A time-loop adventure with a simple yet daunting premise: discover why your sun keeps blowing up. *Outer Wilds*' handcrafted solar system is full of weird and wonderful ideas that make each 22-minute run a joy. Each planet is a little puzzle unto itself, packed full of interesting things.

**Imogen:** Accepting your death has never been so enjoyable.

## 26 STRANGE HORTICULTURE

RELEASED 2022  
LAST POSITION New entry

**Jody:** You run a plant shop and solve puzzles, helping villagers find herbs to cure skin irritations, or flowers to brighten a wedding. Then *Strange Horticulture* grows to encompass poisonings, druids, and supernatural investigators until you're entangled in a mystery with stakes much higher than whether Mr Burbidge gets a rash.



## 30 DEEP ROCK GALACTIC

RELEASED 2018 | LAST POSITION No change

**Robin:** Forget *No Man's Sky*, this co-op shooter is the true king of procedural exploration. Even 80 hours in, I still regularly discover stuff that blows my mind. And the brilliant thing is, it's not just set dressing – *Deep Rock Galactic*'s mechanics, based as much around digging, drilling, and navigating as combat, force you to interact directly with these unique environments. Every weird rock formation is its own puzzle to work out or obstacle to overcome. Seriously clever.

## 29 MONSTER HUNTER: RISE

RELEASED 2021 | LAST POSITION New entry

**Mollie:** I still prefer *World*, but nobody can deny that *Rise* is a damn good *Monster Hunter* game. It's fluid, mobile and great to look at despite being a Switch port.

**Sean:** With the *Sunbreak* expansion *Rise* goes from strength to strength, deepening the combat mechanics and adding some of the most spectacular fights I've seen in a long time. NPC hunters finally fight alongside you, too. What other game lets you KO a monster by hurling a giant insect at its face?





T100P

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25

## TEARDOWN

RELEASED 2020 | LAST POSITION 66 ▲

**Nat:** *Teardown* left early access this year, and that rip-smart campaign of creatively destructive heists is a small part of why it's shot so far up this year. But *Teardown's* real killer feature is that, over the past year, it's secretly turned into *Garry's Mod 2*.

When you're done tearing through the campaign's half-dozen levels, you can pop into the Steam Workshop

and find hundreds more voxelated sandboxes to smash, tools with which to smash them, and modifiers to the way things even smash apart. It is, in short, smashing stuff.

**Morgan:** And don't forget the surprising campaign! On top of being a very cool toy, *Teardown* is also one of the smartest, most open-ended puzzle games I've played.



## 24 GOD OF WAR

RELEASED 2022 | LAST POSITION New entry

**Jorge:** It's no surprise that the PC port of the best game on PlayStation 5 makes the list. In many ways, *God of War* on the PC is the best version of this epic father/son bonding trip. Unlocked framerates, ultrawide monitor support, and a host of graphical options only available on PC make the feeling of tossing your magical axe at the skull of a gruesome troll into a near-religious experience. I just hope *God of War: Ragnorok* doesn't take as long to make it way to PC.

## 23 TOTAL WAR: WARHAMMER 2

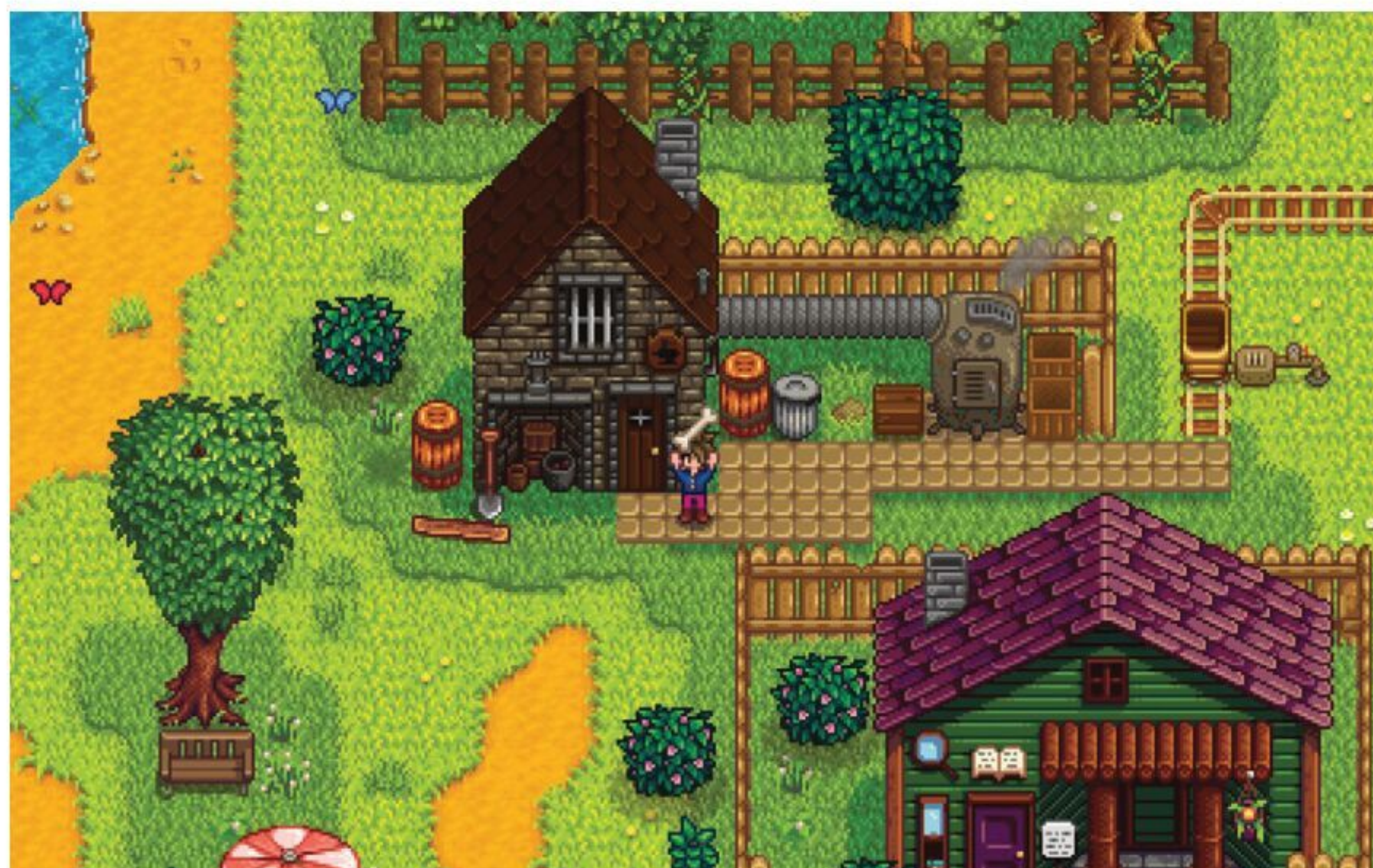
RELEASED 2017 | LAST POSITION No change

**Jody:** *Total War: Warhammer 2* remains the peak of Creative Assembly's brand of expansive, more-is-more strategy. That's not because *Warhammer 3* is bad, but because it's had less time to scale up. It can't compete with what all the updates, rebalances, and DLC have done for *Warhammer 2*.

*Mortal Empires* made it truly gigantic, and later patches streamlined the turn times. It picked up undead Pharaohs, zombie pirate captains, and a goblin warlord who is also a chef. I don't like to throw around the word "epic" because I don't know if many videogames really deserve the same adjective as *Beowulf*, but *Warhammer 2* feels pretty epic. Maybe *Warhammer 3* will get there in a year's time. I hope it does.







22

## STARDEW VALLEY

RELEASED 2016 | LAST POSITION 26 ▲

**Mollie:** Many have tried, but still nobody can capture the magic of *Stardew Valley's* immaculate vibes. This quaint pixelated farming sim is the first game I recommend to anyone looking for something cheap and cosy to play. I've spent countless hours jazzing up my farm, letting Abigail eat a small quarry's worth of quartz and marrying Shane for the umpteenth time.

It's the kind of game I'll 'quickly' boot up to start a new farm before blinking and realising it's now 4am while I'm frantically bombing my way down to the bottom of the Skull Cavern.

**Katie:** Confession time! I've never actually gotten past summer in *Stardew Valley*.

It's on my gaming to-do list, but I keep getting distracted by other farming sims. I tend to complain about the game on the internet, and yet I'm always drawn back to it.

There's something special about *Stardew* that will always hold a place in my heart. It's one of the only co-op games my partner and I have played that didn't stress me out, since our base wasn't getting attacked every five minutes. Also I can send him off into the mines while I pootle around, watering the crops and decorating, maybe doing a spot of fishing. It's what virtual farm life is all about: sharing the load.

### PERSONAL PICK

Jacob Ridley



### PROJECT ZOMBOD

A stellar survival simulator disguised as simple fun. The depth to this game is phenomenal – one mistake and you're overrun. But that's not all that makes it sing, it's the way it's all so very easy to dive into with friends since its major multiplayer content update.

### PERSONAL PICK

Phil Savage



### DEUS EX

Still one of the best immersive sims you can play. It can be hard to get into – many of its ideas have since been streamlined and refined – but those rough edges are the result of its sheer ambition. *Deus Ex* is still the master, able to reward every last bit of the effort you put into it.



## 21 DOOM ETERNAL

RELEASED 2020 | LAST POSITION 18 ▼

**Morgan:** It may have fallen a few spots this year, but *Doom Eternal* is still one of the best FPS campaigns around. The sequel demonstrates a clear throughline from where *Doom* started and where shooters have gone since, marrying the original's simplicities with a few decades worth of good ideas to spice up the action.

*Eternal* finished the work *Doom* began in 2016. As I airdashed across Hell, laser-swording aliens in two, I wondered if shooters will ever be this good again.

## 20 YAKUZA 7

RELEASED 2020 | LAST POSITION No change

**Lauren M:** I didn't believe a new main character could carry the *Yakuza* series mantle until I fell in love with eternal optimist Kasuga Ichiban.

**Jorge:** *Yakuza 7* restored my faith in humanity. It's also a fun JRPG in which you fight enemies called Piss Wizards. It never ceases to put a smile on my face.

**Phil:** *Yakuza's* shift to JRPG has revitalised the series, allowing its broad, childish humour and deep love of distractions and minigames shine in a new way.





### 19 UMURANGI GENERATION

RELEASED 2020

LAST POSITION No change

**Tyler C:** A game that blares. It drips with a reality that I can taste even after capturing the end of its crumbling world. It's potent in a way that games so rarely are.

**Nat:** A loud, furious protest piece that firmly shuts down complaints about politics in games, all while functioning as the coolest photo mode around.



### 16 WILDERMYTH

RELEASED 2021 | LAST POSITION 14 ▼

**Jorge:** One of the most unique games you'll ever play. This fantasy turn-based strategy game uses procedural storytelling to craft a seamless narrative in a pop-up storybook art style. Each playthrough is different and you never quite know what's in store for your band of heroes as you move from chapter to chapter in a world filled with magic and monsters. Characters can die of old age, have kids, turn into werewolves, or replace severed limbs with mystical prosthetics.

### 15 DISHONORED 2

RELEASED 2016 | LAST POSITION 13 ▼

**Phil:** Arkane's masterpiece, and still the best first-person stealth game you can play today. The levels are peerless, full of intricate paths that reward exploration and mastery of your tools. The action is refined, allowing for both methodical planning and graceful execution. And the commitment to immersion means that every choice and action is reflected back at you. As Arkane shifts towards taking the game's lessons into other genres and styles, I fear we won't see its like again for a long time.



### 18 RED DEAD REDEMPTION 2

RELEASED 2018

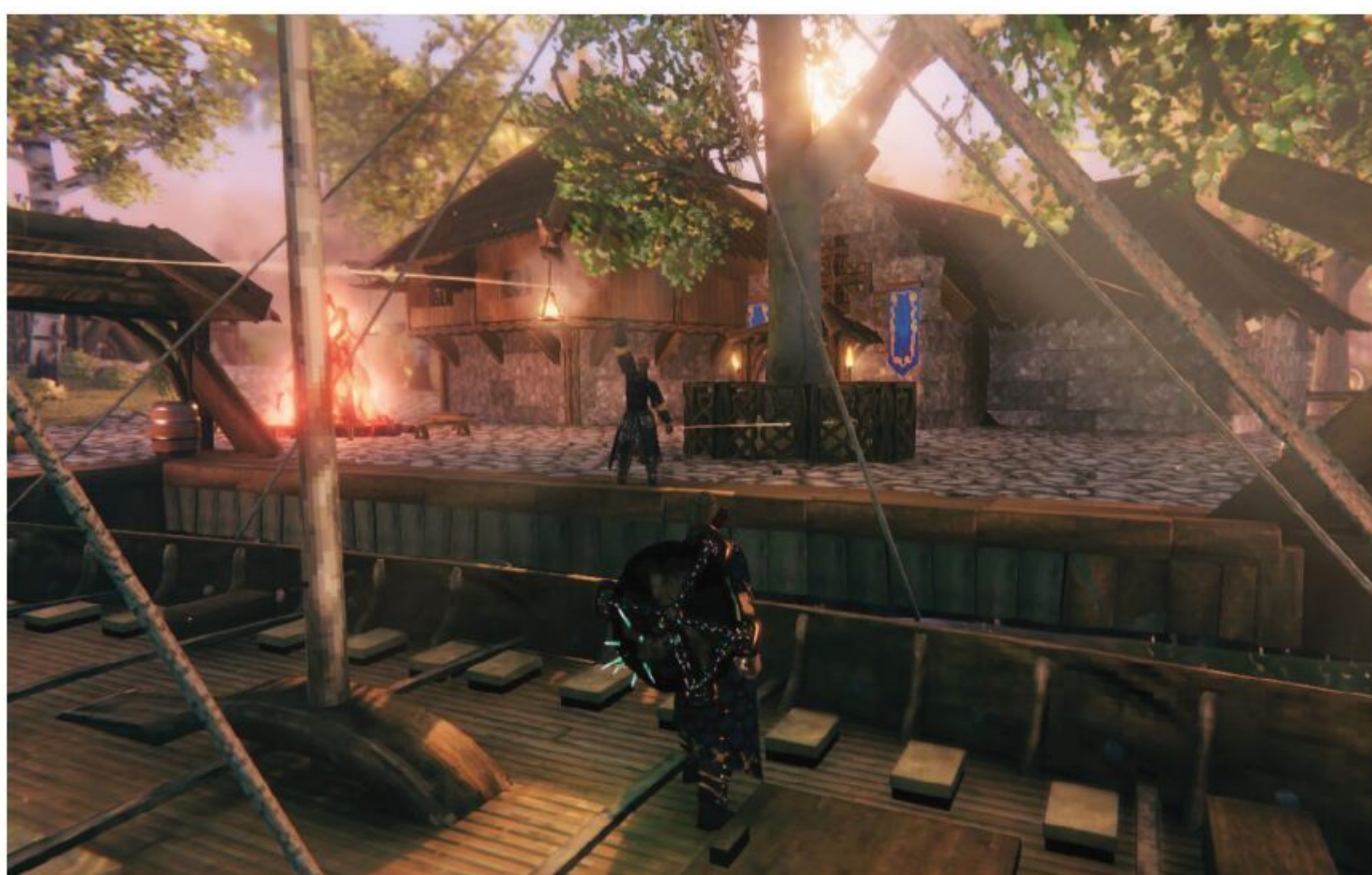
LAST POSITION 5 ▼

**Morgan:** Look, Rockstar's definitive cowboy shooter and horse care sim is one of the greatest games ever, but I couldn't convince these chuckleheads to keep it higher on the list. That said, *Red Dead Online* has had few meaningful updates in four years. A shared world cowboy MMO is too good an idea to keep screwing up.

### 17 HOLLOW KNIGHT

RELEASED 2017 | LAST POSITION 16 ▼

**Wes:** The mystery, melancholy, and pin-sharp action in *Hollow Knight* kinda ruined *Metroid: Zero Mission* when I played it last year. *Metroid's* blocky map design and missile-spam boss battles felt so quaint in a post-*Hollow Knight* world. I expect to be obnoxiously lobbying for *Silksong* to take the no. 1 spot next year.



### 14 VALHEIM

RELEASED 2021 | LAST POSITION 10 ▼

**Lauren M:** *Valheim* single-handedly rekindled my love for crafting survival games. Even in Early Access it ripped apart what wasn't working for me in the genre, setting my new standard for building systems and finally making me care about cooking.

**Sarah:** I still love the low-stress vibe of just existing in this world. Heading out to explore or getting stuck into a building project without having to constantly check hunger levels is just one of the things that makes this my favourite survival game.

**Chris L:** I've written so much about *Valheim* since it launched I'm not sure what's left to say, so rather than gush

about how it thoughtfully revised familiar survival systems and shrewdly left PvP as an afterthought to focus on co-op, I'll just talk about vibes. *Valheim* has the best vibes in games, and so many of them.

There's the cozy, comfy feeling of tinkering in your base and doing a spot of farming, but there's also the gripping terror of being caught in a storm at sea in the middle of the night. There's the spookiness of the black forest, the utter dread of the swamps, and the heavenly lure of the plains (before a deathsquito snipes you, of course). It's replaced *Minecraft* as my go-to procedurally generated world of choice, and that's saying something.



13

## XCOM 2

RELEASED 2016 | LAST POSITION 12 ▼

**Jody:** *XCOM 2* remains ahead of its imitators in the turn-based squad tactics space thanks mainly to tactility. When a sprinting soldier slides into cover it feels like moving a board game piece, when the camera swings down in a dramatic moment it's like leaning down to get a closer view of a tabletop. *XCOM 2* is what I saw in my head when playing *Warhammer 40,000*.

Though some of its imitators have abandoned random chance-to-miss, going back to *XCOM* has made me appreciate its diciness too. There's a gambler's thrill to the surprise hit against the odds, and the missed 90% shot at a Viper who is about to crush a teammate that forces you to scramble for an alternate solution.



## 12 DEATH STRANDING

RELEASED 2019 | LAST POSITION 6 ▼

**Dave:** Always love Kojima games... until I reach both the expositional cutscene event horizon and the hard no barrier of those damned character names. There's always this point where I can't take any more and just have to sit back and go, "naaaaaaaaaaaaaaaah".

**Jorge:** Despite its mostly nonsensical story featuring people named Mama and Die-Hardman, *Death Stranding's* gameplay and overall vibe are just splendid. Whether it's finding a way to deliver a pizza past a field filled with weird shadow-goo monsters without getting murdered or reconstructing a highway across the midwest of the United States that'll make zipping across the land on your future trike easier, *Death Stranding* is a game like no other.



## 11 DIVINITY: ORIGINAL SIN 2

RELEASED 2017 | LAST POSITION No change

**Jody:** It's a good time to be into fantasy CRPGs, even if you're one of those heathens who thinks the C stands for 'classic' instead of 'computer', with games like *Solasta* and *Pathfinder* taking tabletop experiences and dropping them onto your PC in relatively faithful fashion. *Divinity: Original Sin 2* is still top-tier thanks to the way it anticipates everything. Yes, you can be a skeleton who disguises their undead nature by wearing a bucket on their head, then pick locks with your finger bones.





### 10 FINAL FANTASY XIV

RELEASED 2013 | LAST POSITION 17 ▲

**Lauren M:** I finally started my free trial and now I stand around Limsa Lominsa admiring everyone else's outfits. Can recommend.

**Tyler C:** A friend once described *FFXIV* to me as a singleplayer JRPG with community mechanics. They were right. I continue to be astounded with how incredibly intimate and massive *FFXIV* can be,

especially in a genre that often trivialises your impact in the world. It's home in a way that no other MMO has been for me for years.

**Mollie:** The only game that encapsulates feeling horny, happy and infuriated all at once. 3,000 hours later and *FFXIV* keeps pulling me in. 2022 wouldn't have been the same without savage raids, bunny boys and Limsa Lominsa.



### 9 THE WITCHER 3

RELEASED 2015 | LAST POSITION No change

**Lauren A:** Fiddly combat aside, *The Witcher 3* has some of the best characters and storytelling in this list. I still love cutting about as the grumpy Geralt and romancing Yen. While the main story is full of love, loss and subterfuge, it's the sidequests that really make *The Witcher 3* shine.

Blood and Wine was by far the superior DLC, and *Equine Phantoms* is its

best side quest, with Geralt tripping on mushrooms as he has a friendly chat with Roach, who side-steps the "how come you always show up right away when I whistle?" question.

By the end of the expansions, you really understand that inside of an emotionless freak, Geralt is a grump old dad who loves his hot wife, horse and swords.



### 8 MINECRAFT

RELEASED 2011 | LAST POSITION No change

**Lauren M:** As was said in the yearly Top 100 debates, "recommending *Minecraft* is like recommending water," which maybe implies it's boring but also that it's essential. *Minecraft* is still the bedrock (pun intended) of the genre. It innately supports both creative and combative pursuits, but the community continues to support even more

playstyles in PvP servers, custom platforming maps, overhaul mods, and third-party tools for immense builds. Over ten years on, *Minecraft* feels as enduring as the internet itself. If I ever grow bored of it, it's only ever until I find some new niche fixation.

**Mollie:** No other game makes smacking blocks and building pretty things this much fun.



### 7 SLAY THE SPIRE

RELEASED 2019 | LAST POSITION No change

**Imogen:** As a recent *Slay the Spire* convert, I wasn't satisfied with just playing it on my PC, I had to own it on mobile too for ganks on the go. It's the perfect card game.

**Robin:** *Slay the Spire* isn't just brilliant, it's PC gaming canon at this point. It launched the deck-building roguelike genre into the mainstream, and spawned a whole family of imitators

and descendents. Even the new Firaxis game takes heavy inspiration from it – when the king of turn-based strategy picks up what you're putting down, you must be doing something right. And, crucially, it's still the best at what it does. *Monster Train*, *Fights in Tight Spaces*, *Roguebook*... they're good games, but they're not *Slay the Spire*.





6

## HUNT: SHOWDOWN

RELEASED 2019 | LAST POSITION 28 ▲

**Evan:** Crytek's creepy 'extraction shooter' is smart, bold, but above all, messy. You're fighting it out in swamps and mines crawling with headless horrors and shambling beehive women, sloshing through ponds clutching a revolver slathered in mud, aiming it at a shirtless man who is also slathered in mud. "Screw this place" is not something I say about *Fortnite* maps.

But out of that ugliness comes beauty of design. *Hunt* challenges our modern concept of balance in multiplayer shooters. The unevenness of

its weaponset creates a true marksman's game of tracking prey across terrain.

You can defeat one of *Hunt*'s boss monsters, earning the match's prize bounty, only to be gunned down on your way to the finish line by someone who bought the most expensive gun in *Hunt*. Balanced? No. But its peaks and valleys are way more pleasing than every shooter that's had its edges shaved off.

**Jacob:** *Hunt: Showdown* is the game you haven't been playing but absolutely should be.

**Morgan:** Top 10? It's about time.

5

## HITMAN 3

RELEASED 2021 | LAST POSITION 2 ▼

**Phil:** On its own, *Hitman 3* is a quality stealth game that would no doubt ride high on this list. But it's the full package that puts it over the top. Combined with the two Access Passes, you can play Io's full 'World of Assassination' trilogy in one game – an absurd wealth of intricate puzzle sandboxes, each hugely replayable thanks to their challenges and remixes.

*Hitman*'s stock in trade is social stealth – the ability to blend in and gain access to places you shouldn't be. This latest trilogy features some of the best levels in the series' long history. From a murder mystery in an English manor, to an unforgettable seaside holiday, *Hitman* is packed with scenarios that will keep you entertained for hundreds of hours.





# T100P

2022

4

## APEX LEGENDS

RELEASED 2019 | LAST POSITION No change

**Nat:** What do I even say about *Apex* at this point? Respawn's battle royale has taken over my life, to the point where I'm literally writing this while wearing *Horizon*'s jumpkit. It's the best shooter you can play on PC, period. The gunplay

is sublime, the movement dense with intricacies, the maps vibrant and dynamic. Beyond BR, experimental modes like Arenas and Control continue to redefine what *Apex* can even look like.

But more than any other hero shooter, *Apex* cares so damn much about its characters. The Legends are flawed, deeply human people with messy, dynamic relationships. Respawn is constantly experimenting and improving on how it can tell a sci-fi drama through battle royale, elevating *Apex* from 'good' to 'all-time great'.



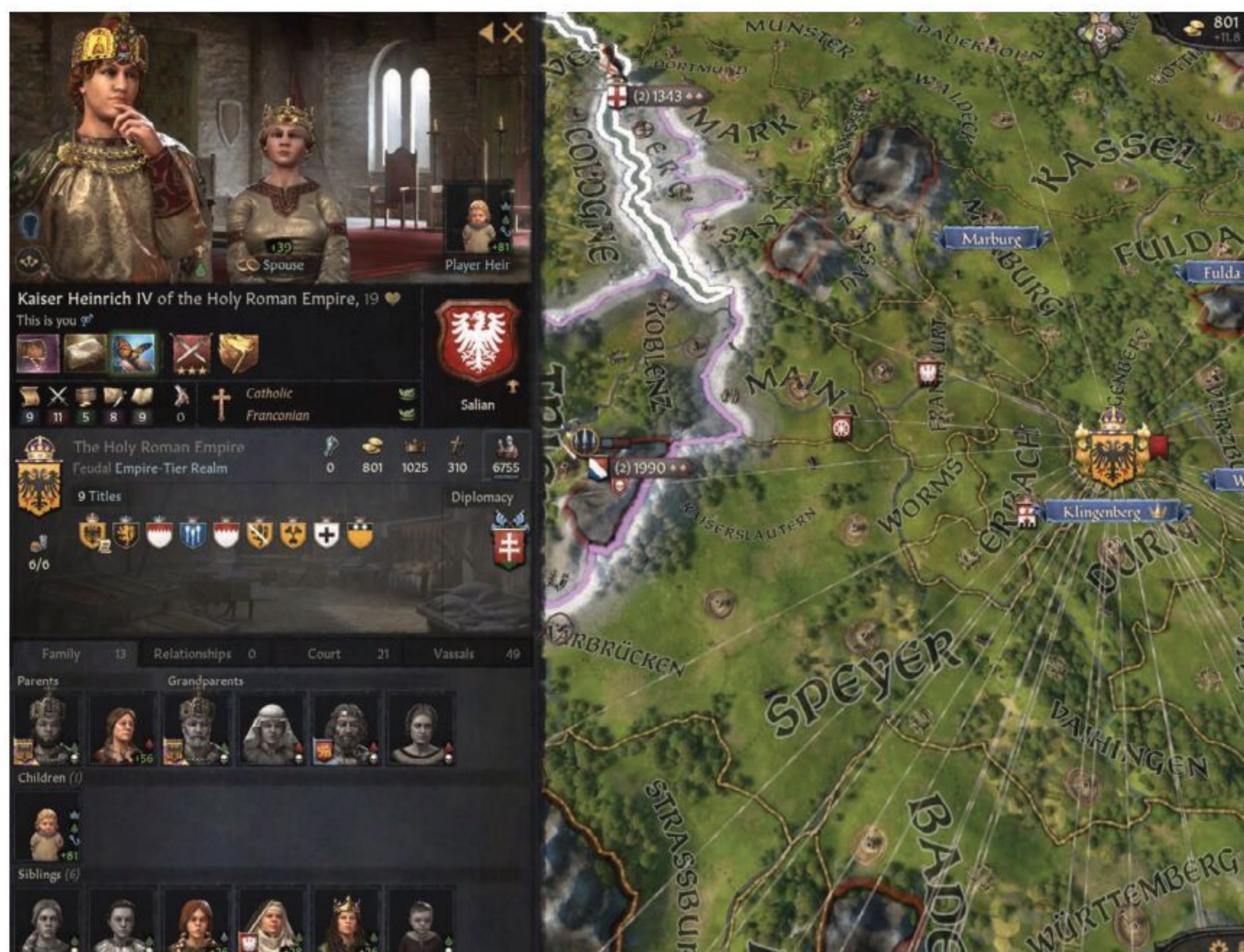
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## CRUSADER KINGS 3

RELEASED 2020 | LAST POSITION No change

**Robin:** Another year of DLC and updates has only cemented this game's place as the definitive medieval grand strategy game. Or is it a role-playing game? Or a life sim? Whatever you call it, the magic of stepping into the shoes of a historical ruler and attempting to steer their chaotic life like a baboon with a three-wheeled shopping cart is stronger than ever.

**Fraser:** I can't envision a time where I'm not obsessed with *CK*. Especially now that I can decorate my throne room and order artisans to craft me mystical weapons. It's absurdly rich in story, intrigue and delight, all bolstered by wonderful writing. If this ever drops out of the top five I'll kick off.







2

## ELDEN RING

RELEASED 2022 | LAST POSITION New entry

**Nat:** *Elden Ring* is not my favourite FromSoft (what's up, *Bloodborne*?) but it is the most FromSoft game, a Soulsborne of such dizzying, terrifying scope that rolling credits on it feels akin to finishing the entire extended cut of *The Lord of the Rings* trilogy. A true epic, one in which the memories of first setting off from the pastoral fields of Limgrave feel like a lifetime ago.

There is so much stuff in *Elden Ring* that it's dizzying, but almost all of it – even major bosses – is optional. On my first run, I systematically eliminated every lord, shardbearer, evergaol and catacomb boss from the game in a slow, 160-hour ordeal. On my second, I sprinted straight to the midpoint of the game in 90 minutes.

**Sarah:** There's nothing that beats the feeling of killing a boss for the first time, especially if you've been struggling with it for days – I'm looking at you, Malenia. Even after I finished the game, I spent an obscene number of hours exploring every corner, hoping to find something lore-related that others had missed.

**Dave:** *Elden Ring's* been the first FromSoft game I could stand, or even actually play (I'm not very good at games) and its mix of exploration and reward really struck a chord. But deep down I know there will come a time when I can no longer cope with some attritional boss I cannot beat and will quit the game for good. For now it still lives on my SSD as wonderful gaming potential, though I'm actually now a bit

scared to dive back in lest I arrive at that expected hard stop and it negates all the fun I've had in the game. I have issues.

**Ted:** Playing *Elden Ring* had me feeling like the food critic in *Ratatouille*, only instead of a bucolic French cottage it sent me back to playing *Dark Souls* on a dorm room floor in 2014. It has just the right level of challenge, a dizzying array of character build options in a fantastic combat system, and the best setting FromSoft has created to date.

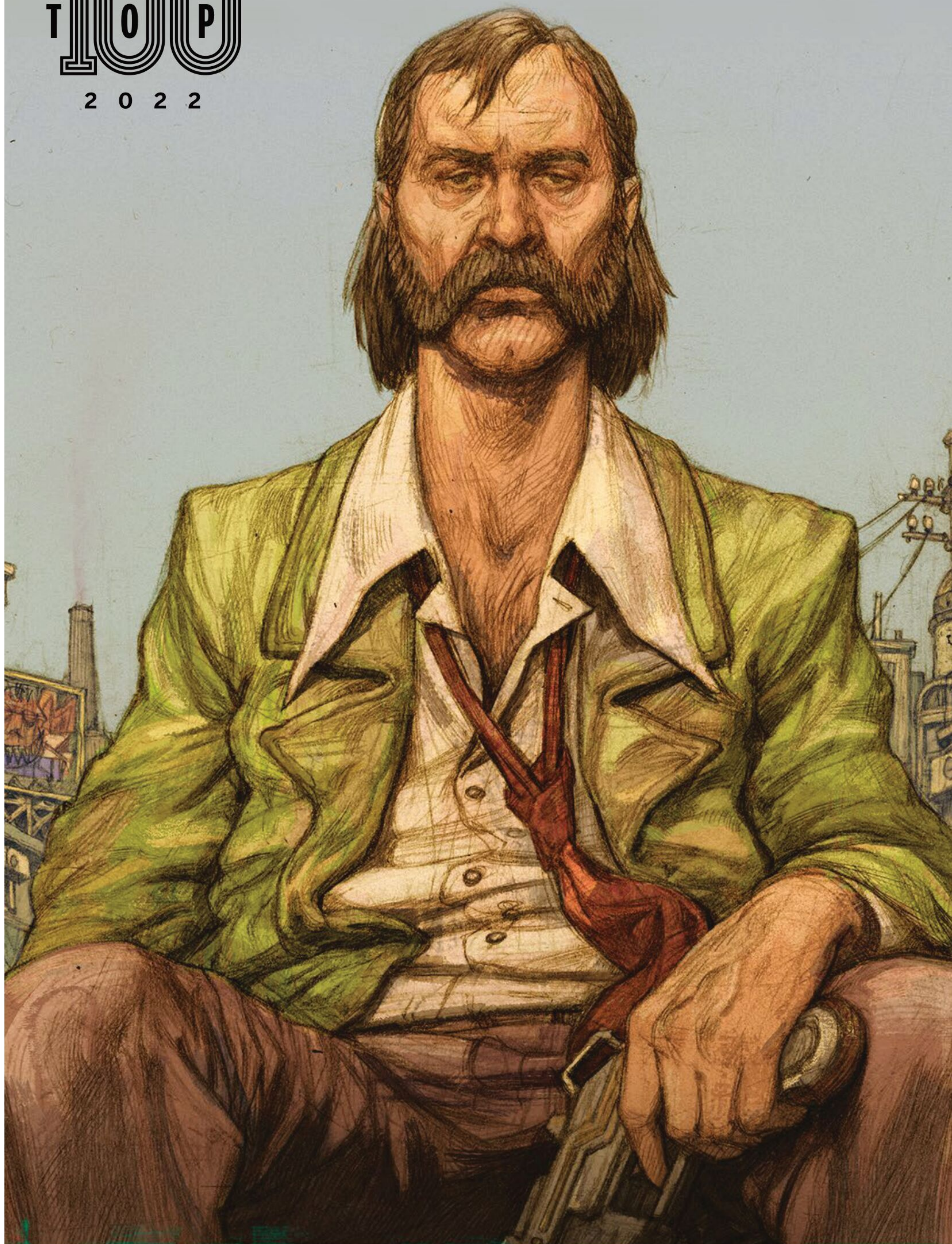
**Robin:** Like Dave, I never quite clicked with From games before. I liked *Dark Souls* and *Bloodborne* well enough, but they didn't really stay with me. *Elden Ring*, though, burrowed right into my mind the minute I stepped out into its open world. I don't think it's the easiest From game, but it's certainly the most accessible, combining clearer storytelling with a setting that lets you choose your own challenge and pace. It's a more familiar fantasy world than *Dark Souls*, and yet is still shot through with From's distinctive identity, at every turn contrasting wonder, sadness and horror.

And who knew that From's organic approach to environmental design would be such a perfect fit for an open world? It can't be overstated how refreshing it is to explore a landscape and just find cool stuff around every corner without a map marker or a quest log in sight. The sense of true discovery is magical, and the land's stories are told not through journals and exposition, but just in the physical scenes you creep your way carefully through.



T100P

2022





1

# DISCO ELYSIUM - THE FINAL CUT

RELEASED 2019 | LAST POSITION No change

**Robin:** There's no game out there that has a stronger sense of its own voice than this one. Three years on from its original launch, I still regularly see people talking about its characters, riffing on its unique dialogue, and making memes about communism. That's a testament to how much its personality shines through.

Its approach to stats and character building remains brilliantly unique – turning each of your abilities into its own voice in your head, and not so much giving you moral choices as moral traps in its quest to nail down your political standings. It's refreshing to see a game push so hard for innovation in an isometric CRPG.

**Katie:** How sad that I only discovered the morbid joy of this game in 2022. And yet, how perfect that it coincides with my current obsession with true crime. It's sharp, intense, and sumptuously dark, yet it somehow manages to make me titter under my breath at every encounter.

I especially adore making fun of racist asshats, wittering on about sebum seeping into the brains of the lesser races and making them stupid. Just wow. I look forward to putting all my points into a practical way to destroy him.

**Jacob:** If there's a game that truly deserves a rerelease every year for the next decade, it's *Disco Elysium*. There are few games that feel as timeless and sure of their storytelling. I've played it through twice and I still feel it has much more to tell me – I just can't bring myself to lean into the authoritarian cop lifestyle, no matter how entertaining that side of the game appears to be.

**Fraser:** I knew I'd love *Disco Elysium* when I died trying to get clothes from a ceiling fan in the first minute, which was further cemented when I had a heart attack after kicking a mailbox. It's hysterically funny and absurd, but simultaneously blessed with lots of smarts and the ability to make me weepy and introspective. I thought *Elden Ring* might knock it off the top spot, but here it is again, for the third time, and really this is the only place for it.

**Wes:** Wait a second, *Elden Ring* isn't no. one? This list is a sham! ... is what I would say if any game besides *Disco Elysium*

beat FromSoftware's magnum opus. *Elden Ring*'s scope was incredible, but it was very much *Bigger Dark Souls* in most ways, and we've played a hell of a lot of *Dark Souls* over the last decade. Meanwhile, no one else has made a game like *Disco Elysium*: an RPG that eschews combat, is a little bit Nietzsche and a little bit Mr. Bean, and still manages to deliver a gripping mystery despite being weird as hell.

You can play *Disco Elysium* on consoles now, but this is unabashedly a PC game, and a worthy evolution of the '90s RPGs that were the best the PC had to offer.

**Jody:** Some games rely on lengthy cutscenes to tell their stories. If you've ever watched a Quantic Dream cutscene and thought David Cage should have sent you an email instead, the way *Disco Elysium* deploys paragraphs of beautiful words comes as blessed relief.

Its descriptions of crime scenes bulge with evocative phrasing, while your skills talk to you in styles of their own, Shivers describing the city and its inhabitants

distantly while Electrochemistry shares its expertise on drugs and drinks with a pusher's eagerness, begging you to try them all. Visual Calculus examines clues so adroitly it's like being inside Sherlock Holmes.

Then there are the characters, whose voices are distinct whether you're discussing obscure philosophy, talking political history, or being shouted at.

I've played a few games 'inspired by' *Disco Elysium* this year, but none of them measured up. If you want another RPG that does philosophical arguments about reality this well, you still have to go back 23 years to *Planescape: Torment*. I don't see *Disco* being dethroned for a while.

**"IT'S HYSTERICALLY FUNNY AND ABSURD, BUT BLESSED WITH LOTS OF SMARTS"**



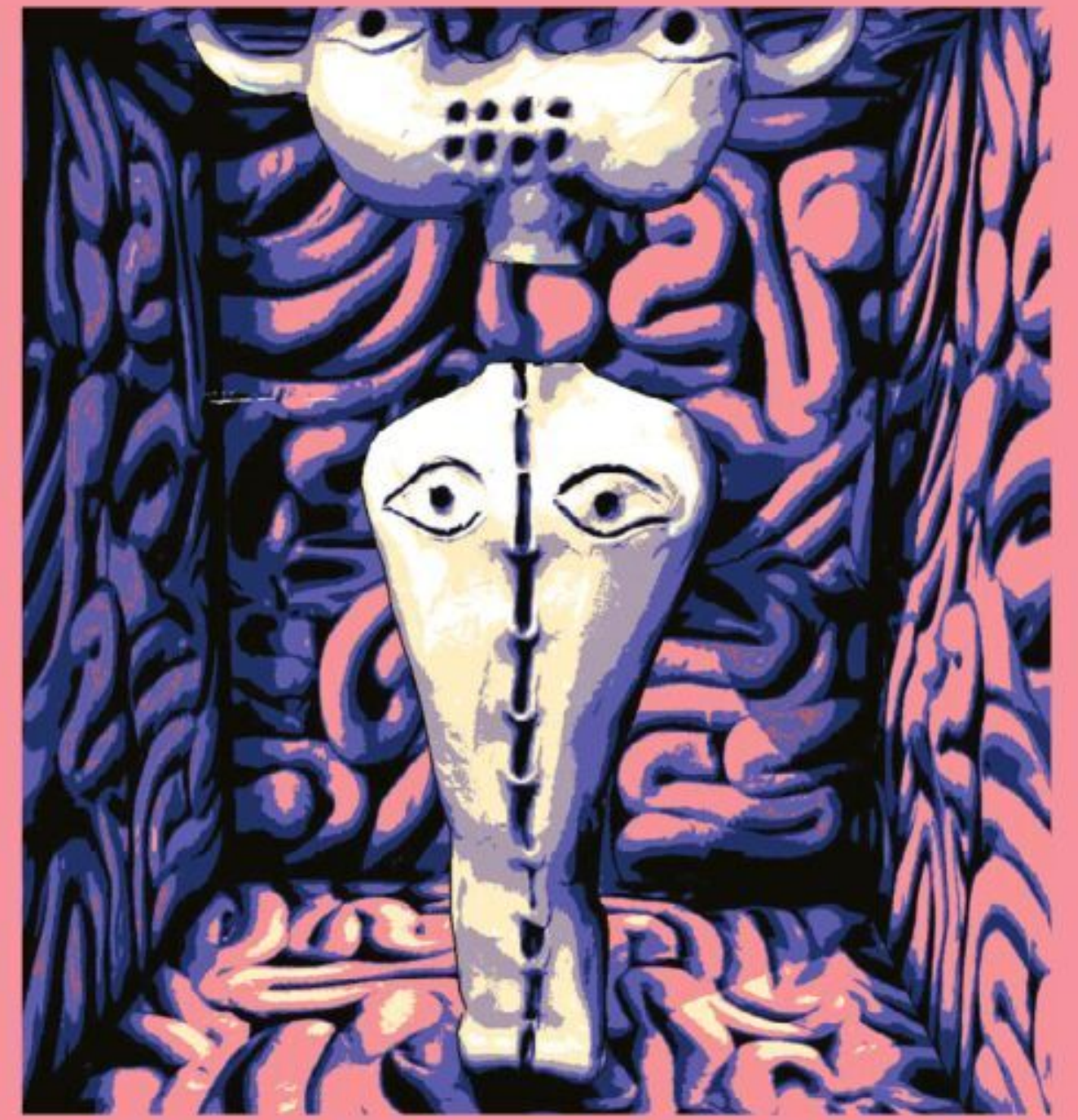


# Short stories

How indie **'MICRO-RPGs'** offer  
fascinating perspectives on the  
genre's overstuffed epics.

*By Edwin Evans-Thirlwell*







**I**n what crumbling, dragon-leather tome was it written that role-playing games have to be so incredibly long? It's certainly not a convention that rings true for Sraëka Lillian, whose RPG Maker-based 'OI' games clock in at a few hours apiece. Each is a focused exploration of one of "a thousand little questions" an RPG developer must answer – *Atom OI*, for example, is an interrogation of the nuances of status effects. "My points of obsession are these fundamentals of RPG design, right?" Sraëka explains. "And I don't need to make a big game to explore those."

Once you're done with the OI games you could move onto jetstorm4's *Fallen Star*, or John Thyer's *Facets* – two wordier yet equally brisk productions that are pitched as the climax of longer, untold fantasy stories. "Like, you get that there's a 20 hour version of this," says Thyer, "but we're cutting straight to the part you care the most about." Or if you want something a touch more esoteric – *Hylics*, Mason Lindroth's visually overpowering but concise claymation escapade. Or for a splash of romance, *Get In The Car, Loser*, the hectic lesbian roadtrip RPG from *Ladykiller In A Bind* developer Christine Love, which tells much of its story in the backseat of a speeding pink convertible. Or for something at once comedic and darker, *Slimes* from scitydreamer, in which you play an asshole adventurer eradicating a single dungeon's worth of *Dragon Quest*'s least-threatening critters.

That's just a small sample of the genre – 'micro' or 'capsule' RPGs, ranging from surgical poetic experiments crafted with free tools such as RPG Maker or Game Maker, to slightly bulkier commercial indies that sometimes play like ruthlessly efficient fan edits of blockbuster RPGs. Micro-RPGs are music to the ears of genre fans who no longer have time for the kinds of games they binge-played as kids, but even if you're a diehard *Dragon Age* player with weeks to spare, these games are worthwhile for how they concentrate and reveal things about the behemoths they riff on.

It's hard to say when RPGs became associated with gruelling length, partly because 'RPG' has become an enormously elastic term, stretching to everything from *Elden Ring* through *Borderlands* to *Persona 4* and *Skyrim*. The primary checks on playlength are practical factors: the size of your team and budget, production timeframes, and having access to the right tools. But Bill Steirnborg – one half of *Cosmic Star Heroine* developer Zeboyd Games – also dates the expectation of a mammoth hour count to the original PlayStation era and the rise of FMV-led RPGs like *Final Fantasy VII*. "It's funny how the context changes. So like, *Chrono Trigger* is a classic, everyone loves it, and it's something like 20 hours long, even if you don't know exactly what you're doing. But somewhere in the late 16-bit, 32-bit era, there came this notion that 40 hours was the expectation. And then as the PS2, PS3 rolled on, that became 60 hours. And now 90 hours long is normal."

This is especially the case, of course, with premium-priced blockbuster RPGs. "You can tell a great story in two or three or four or five or six hours, and I wish there was more of that," Steirnborg goes on. "But understandably, a big studio is not going to take that risk – they're not going to pour a large or even a medium budget into an RPG that's four hours long. And that's kind of where small studios like ours come in."

### TOO BIG TO FAIL

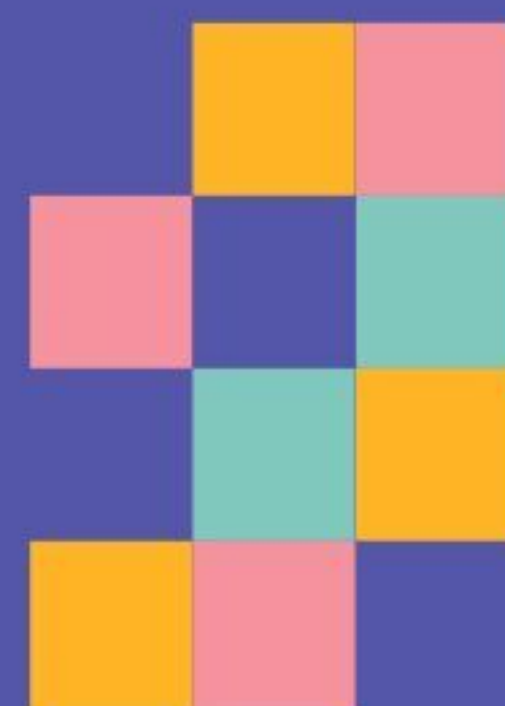
John Thyer suggests that players in North America and Europe have fallen out of love with shortform art in general, linking the bloating of RPG playtimes to the rise of 'extended' narrative universes across games, film, and TV. "I think that it's hard sometimes to just sit down with a smaller work – I feel like that translates to how the Marvel Cinematic Universe is really popular right

now. People like following one big epic story over a long period of time. And I think that it can be hard for people to accept a smaller thing, a one-and-done thing that tells a complete, satisfying story, because it doesn't feed that nerd brain quite in the same way." Thyer also points to the broader 'fetishisation' of complexity in art as a potential catalyst for exhausting playlengths. There are obvious connections with service-based monetisation, with publishers like Square Enix transforming their already-gargantuan fairytale settings into persistent revenue platforms that are designed to

hold your attention indefinitely.

Some shortform RPGs play like refreshing, puzzler-style deconstructions of systems from those exhaustive big studio projects. Sraëka's wonderful *Cataphract OI*, for instance, is a meditation on time inside and outside combat. Four adventurers invade a fortress to break a time loop – a premise that feeds into battles whose participants are effectively suspended outside time and so invulnerable unless forced into 'the fray'. The project began life as Sraëka tinkering aimlessly with a novel

It's hard to say  
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## LITTLEBIGPLANESCAPES

Some slightly bulkier smaller RPG productions



### HERO MUST DIE. AGAIN

You've saved the world, dying in the process, but the gods have granted you five days (around four hours per run) to put your affairs in order while your power dwindles.



### FEATHERFALL

A *Souls*-like from indefatigable miniature-maker Sokpop Collective that should last you five hours tops. Fight seven bosses across four areas as a sword-wielding fledgling.



### MOON HUNTERS

A one to four player action-RPG from the *Boyfriend Dungeon* devs – and a quickfire *Fable*-style personality test. Each choice you make adds to a legend depicted as a constellation.



### SKYBORN

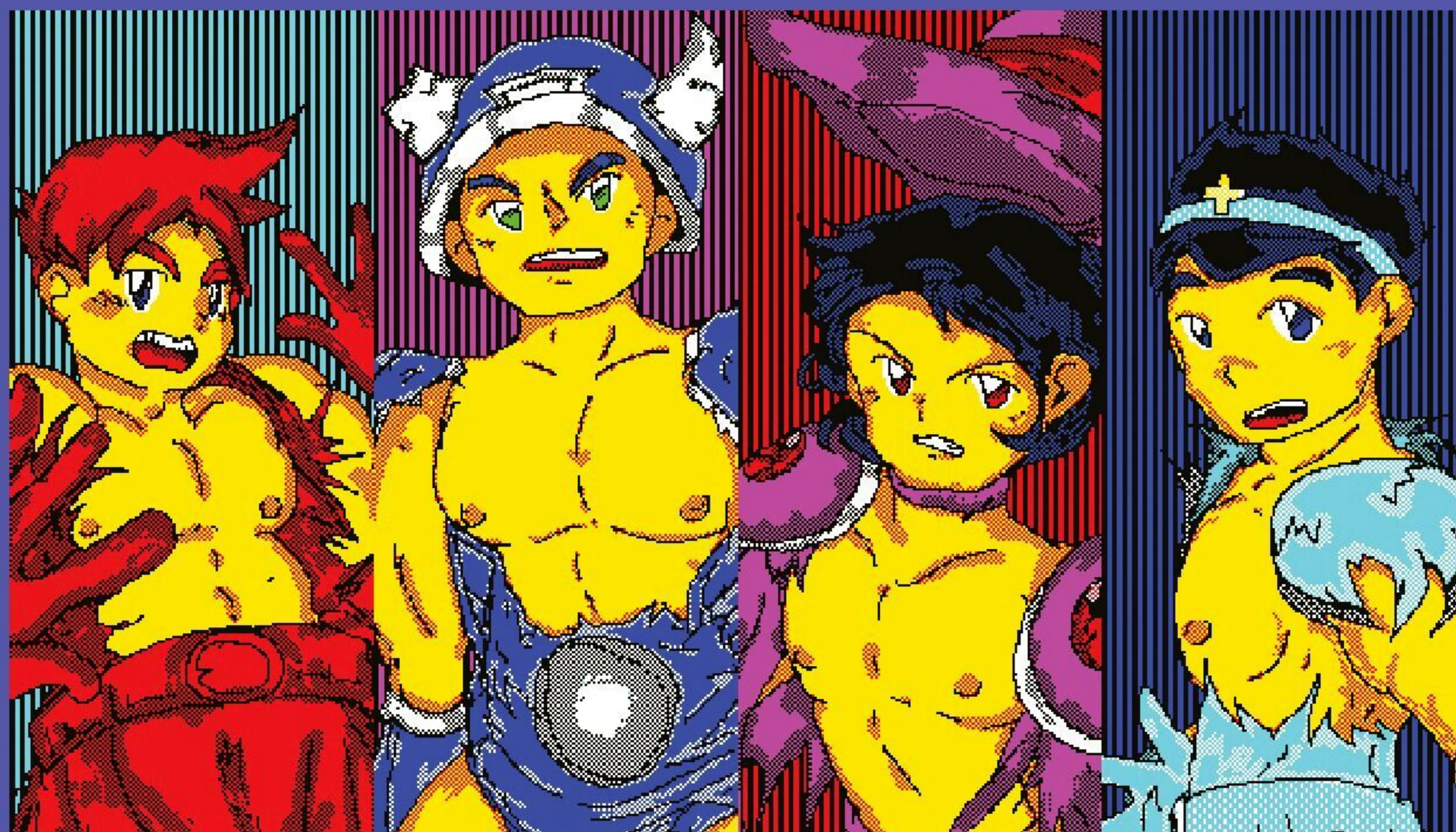
Old school '90s 2D RPG with a steampunk setting, airships, *Dragon Quest*-style POV battle screens, and a plot theme of machinery versus magic. Can be finished in ten hours.





**LEFT:** The amusing but troubling *FACE/PALM* invites you to slap its creator about in order to level him up, while reducing his health – you only get to play once.

**LOWER LEFT:** *Geasaga* from KA-INWORKS channels the era of Japanese home computer such as the PC-88, with a radioactive palette (and bulging pecs).

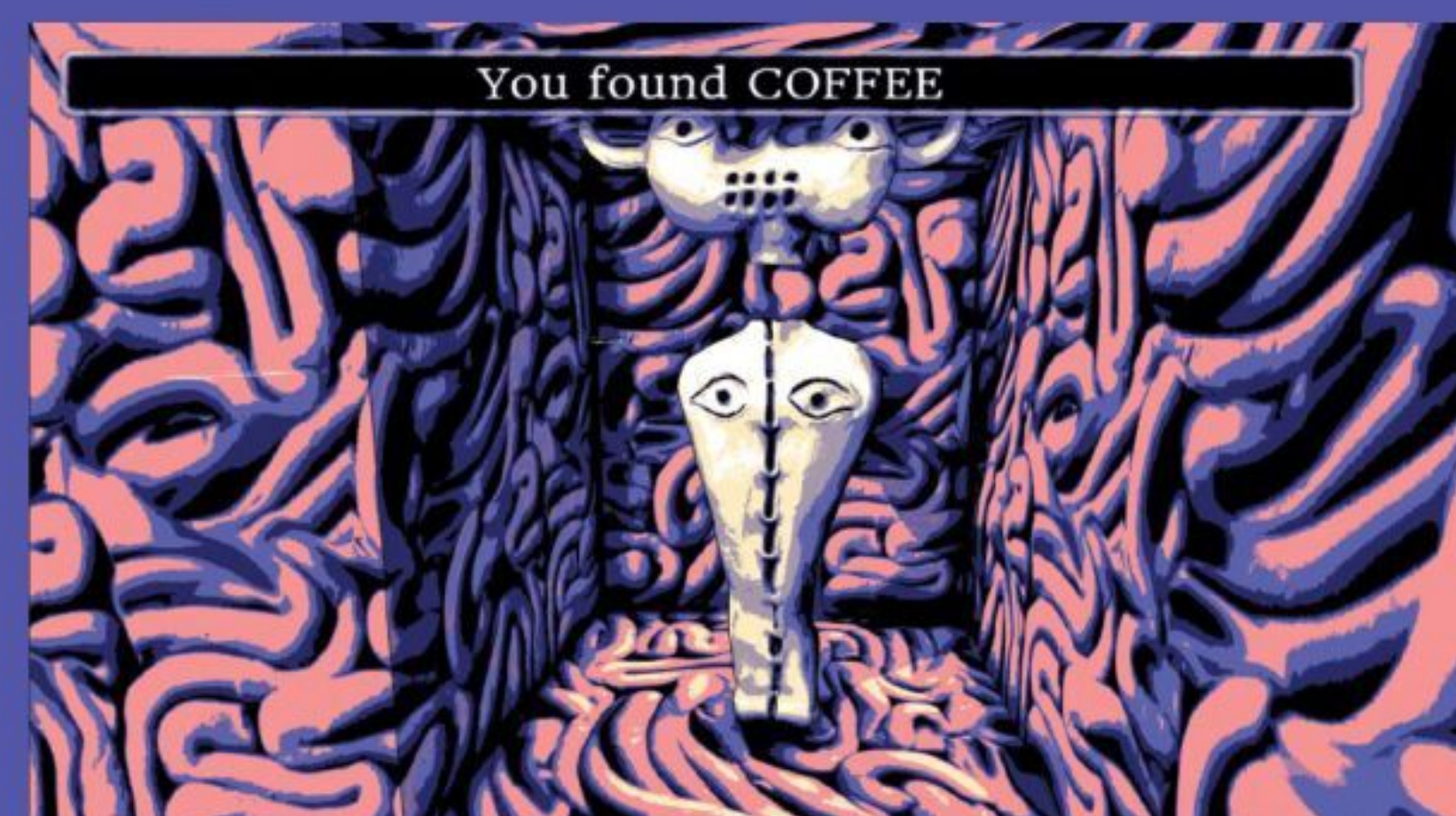






**ABOVE:** *Hyllys 2* is longer than the first, but still a sleek contender at around 15 hours in length – the art direction belies the cleanly-built RPG beneath.

**RIGHT:** Inasmuch as the RPG maker scene has a patron saint, it's the harrowing yet very playful *Yume Nikki*, released in 2004.







» movement system – enter a room, and your party wanders through and fans out in a crisp kind of characterisation. “I wound up dropping off for a year coming back and saying, OK, I have some pieces here, I want to make something out of them. And so it was really what can I do with the pieces I’ve already haphazardly slapped down on the board, rather than a thoroughly, intentionally probing experiment.”

### THE PERSONAL TOUCH

*Get In The Car, Loser*, meanwhile, condenses its playtime by focusing on cast interactions. Inspired by *Valkyrie Profile* and *Final Fantasy XIII* – a game whose opening half is one drawn-out getaway sequence – it leans into the fact that party-member sidestories are often more involving than the overarching plot. “It’s got four characters, four bosses, four areas, and each chapter revolves around a single character’s concerns,” Love says, adding that she hopes “the main reason to keep playing is to hang out with them more”. The character focus “meant we could de-emphasise certain things, like complicated plot twists or map exploration, in favour of the feeling of ‘you learn a lot about people when you’re on an adventure in a crowded car with them’”. Having the whole yarn play out on the road also gave Love’s team tighter control over the alternation between dialogue and battling.

*GITCL* often relies on comedy to stop things dragging, “If there was ever a moment that felt a little too boring to me, I could just punch it up with jokes,” Love says. Many micro-RPGs are comedies or parodies – two formative examples are *Magic Wand* from thecatamites and Toby Fox’s *Undertale*. Zeboyd, especially, has profited from developing RPGs with tongue in cheek. “[When] we made *Cthulhu Saves The World*, game comedy was pretty uncommon,” Stiernberg says. “There was this gap in the market. So we wanted to appeal and just be entertaining with the story that way, since we knew we

weren’t making some huge 40-hour epic.” *Cosmic Star Heroine*, meanwhile, is a more earnest spoof of spy cinema – another flavour of story that puts an emphasis on snappiness. “Instead of going with a *Mass Effect*-esque space drama, we wanted to do a more James Bond story where it’s fast-paced, you’re undercover half the time – there’s a whole scenario where you go to a dinner party in disguise.”

Which is not to say that shortform RPGs can’t explore more sombre themes. Thyer’s *Facets*, for instance, began life as a homage to boss dungeons in early *Final Fantasy*, but evolved into a difficult and very personal narrative about a group of dream-diving inquisitor-type figures rewriting somebody’s personality. *FF* aside, Thyer took inspiration from RPG Maker projects *OFF*, *Space Funeral*, and in particular the legendary *Yume Nikki* – a shifting strata of dreamworlds with no combat or levelling. “It

represents these really raw, ugly feelings almost purely through RPG map design, and that’s fascinating to me. So I was like, what if you’re exploring a brain that’s explicitly a psychological space, what if these bosses are pieces of that personality... I was in kind of a dark space, making the game – it was the end of my marriage, I was getting divorced. And my brain went to conversion therapy and telling this really tragic, ugly, sad story.”

While clearly set in a larger narrative universe, *Facets* avoids undue exposition about, say, the means of invading minds. “I think having thought that stuff through

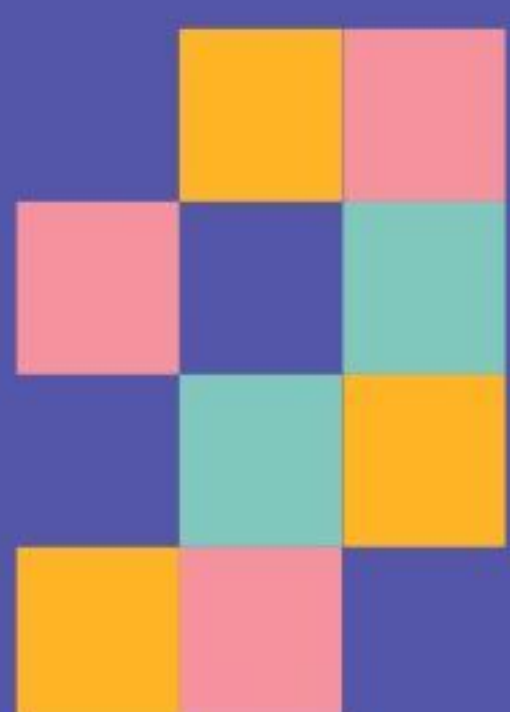
helped the endgame land better because there was a logic, and if there’s a logic to the creator, that usually comes across to the player,” Thyer says. “I just don’t waste their time actually explaining it, because I don’t think it matters to the feelings I want to get across.”

### TOLKIEN POINTS

Many bigger RPGs embrace exposition because they are steeped in the legacy of certain ponderous fantasy or science-fiction books, such as *The Lord of the Rings*, but as Zeboyd’s other half Robert Boyd points out, fantasy and sci-fi needn’t be colossal exercises in world-building or stretching a plot across continents and generations. “If you look at the horror genre, *Resident Evil 4* is a good 20-25 hours long. But you can also have a very succinct 90-minute horror experience that tells a good story. You can have a *Twilight Zone* episode, that’s a half an hour that tells a complete story, or a Junji Ito comic strip that you could get through in ten minutes. It leaves an impact if it’s done well. So I think the idea that fantasy or sci-fi RPGs have to be really long is flawed. I think there’s room for the equivalent of a short story.”

Grandiose narratives in RPGs are also justified with reference to levelling systems – the idea is that you’ll have more of an emotional connection with characters after spending dozens of hours tuning their stats. But do progression systems really need a 20+ hour runtime to have such an impact? “I feel like you can have progression levelling systems even in a short game,” observes Boyd. “Maybe you want to simplify them so much that you’re

Do progression systems really need a 20+ hour runtime to have such an impact?



## LONGREADS

Four big RPGs that carry their own weight...



### TRAILS IN THE SKY TRILOGY

“I think they dedicate that time to creating a lived-in world and it’s not just world-building for the sake of it – they build in these deeply human stories”  
– John Thyer



### PERSONA 4: GOLDEN

“It plays really well in episodes of 30 minutes or an hour [because] it’s more segmented between town exploration and character interaction and dungeons.”  
– Bill Stiernberg



### PLANESCAPE: TORMENT

“It’s a big 30 hour epic, but it’s not a save the world quest. It’s this one dude, figuring out his baggage. And I really liked the scope there.”  
– John Thyer



### FINAL FANTASY XII

“It has a particularly high proportion of optional stuff you’re dealing with all the time – monster hunts and side quests and secret things to explore.”  
– Sraëka Lillian



## Micro-RPGs

not poring over *Path of Exile*-style massive matrices, trying to min-max everything, but there's no reason why you can't have a five-hour game that has a strong progression system. We see that with games like *Super Metroid* – you can beat the whole thing in four or five hours, but you're constantly gaining new abilities and more power as you progress."

Stiernberg notes that how many different abilities, spells, perks and so on you pack into a progression system is less important than how you pace them. He stresses the importance of "a reasonable learning curve that doesn't just throw you in the deep end – although that there's some merit to that, being thrown into the deep end can be really interesting – but just being able to learn and apply it and towards the end, being able to really dig into the strategies".

Well-wrought shorter RPGs such as Zeboyd's own *Cosmic Star Heroine* demonstrate that quick progression arcs can be satisfying, but as Love cautions, they also show that RPGs do generally need more time to teach their intricacies than other genres.

"Especially if you're introducing unfamiliar mechanics to people who are otherwise very familiar with genre conventions, it's really important to not rush through things, or the player will just say, 'Oh, yeah, I've played RPGs before, I know this!' and then get frustrated when it causes them trouble later in the game, so the desire to not bore the player with dragging out introductions, and the desire to just 'get to the good part' can be at odds."

### EXPERIENCE NOT REQUIRED

A conspicuous reliance on grinding aside, Sraëka argues that sluggish endgames are the most obvious symptom of RPG bloat. "Part of what keeps the friction of fighting battles down early on is novelty. And it's common to not introduce a whole lot in the back half, though there are RPGs that do mix things up that I think are really interesting. *The 7th Saga* [for SNES] gives you these items you can use over and over that can restore your HP in battle or give you powerful buffs that are almost necessary for survival. You accumulate these through the middle three fifths of the game, become very dependent on them, and then it takes them all away for the last act. You have to learn how to fight all over again."

Sraëka feels that RPGs should "push back" on players more towards the finish, though they acknowledge that balancing a character's capabilities at every point in an RPG is a huge labour. The OI games don't feature XP or levelling: it's more like meeting with the party at a critical point in their adventures. "It is a lot simpler to balance these things as a single person if you don't have to worry about all these variables changing. It's a wonder to me that anyone – especially solo developers – has ever completed a long RPG where the numbers are going up the whole time, and you have to account for them at each stage."

While they hold out hope of working on a larger RPG project some day, Sraëka has plenty of "unfinished business" with RPG Maker and doesn't regard the OI

games as "stepping stones" to a grander opportunity. "A lot of my work comes from the feeling of, 'I'm really restless right now, I want to make something and I don't want to spend forever on it.'"

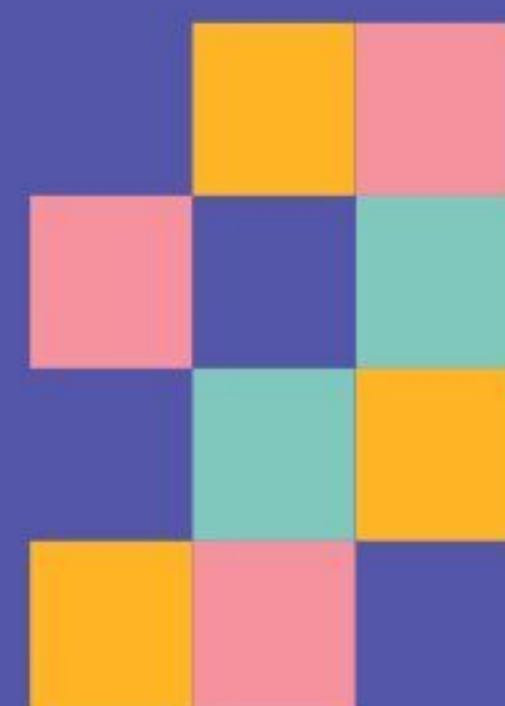
Thyer, similarly, doesn't see *Facets* as the prelude to a larger, more commercial project, not least because he values peace of mind over professional prestige. "I'm not trying to iterate on one thing and get really good at making RPGs and then spend five years making a 20-hour long RPG for Steam. I've just seen a ton of people get burned out taking that approach. I am more interested in doing literally whatever seems fun for me in the moment."

Thyer also points out that the value of shortform games at large is the community they create, where people release quickfire experiments in response to each other's work. "I want to cultivate spaces where my friends can feel comfortable and encouraged to be just recklessly creative."

You could argue that RPGs tend to be gargantuan not because their creators associate time investment with enjoyment, but because they make a point of housing many different experiences, from wonky minigames through scenarios such as puzzle-dungeons to the systems that make up battle.

Rather than 'epics', it's perhaps healthier to frame them as something akin to Thyer's hopes for the shortform gaming scene – a bustling collection of experiments, thrown together in the course of exploring a world. Micro-RPGs might take issue with the legwork involved, but they're not at odds with this ethos. They just give some of those flourishes a little more room to shine. ■

Sluggish  
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## MASTERCLASS

*Dos and don'ts for aspiring RPG devs, from our interviewees*



### DO ...

...take inspiration from 'non-story' genres. John Thyer notes that fighting game backgrounds especially "paint a picture of this whole massive ecosystem".

### DON'T...

...feel obliged to include a 'proper' story. As Robert Boyd points out, the original *Etrian Odyssey* on DS got by without one for all of 40 hours.

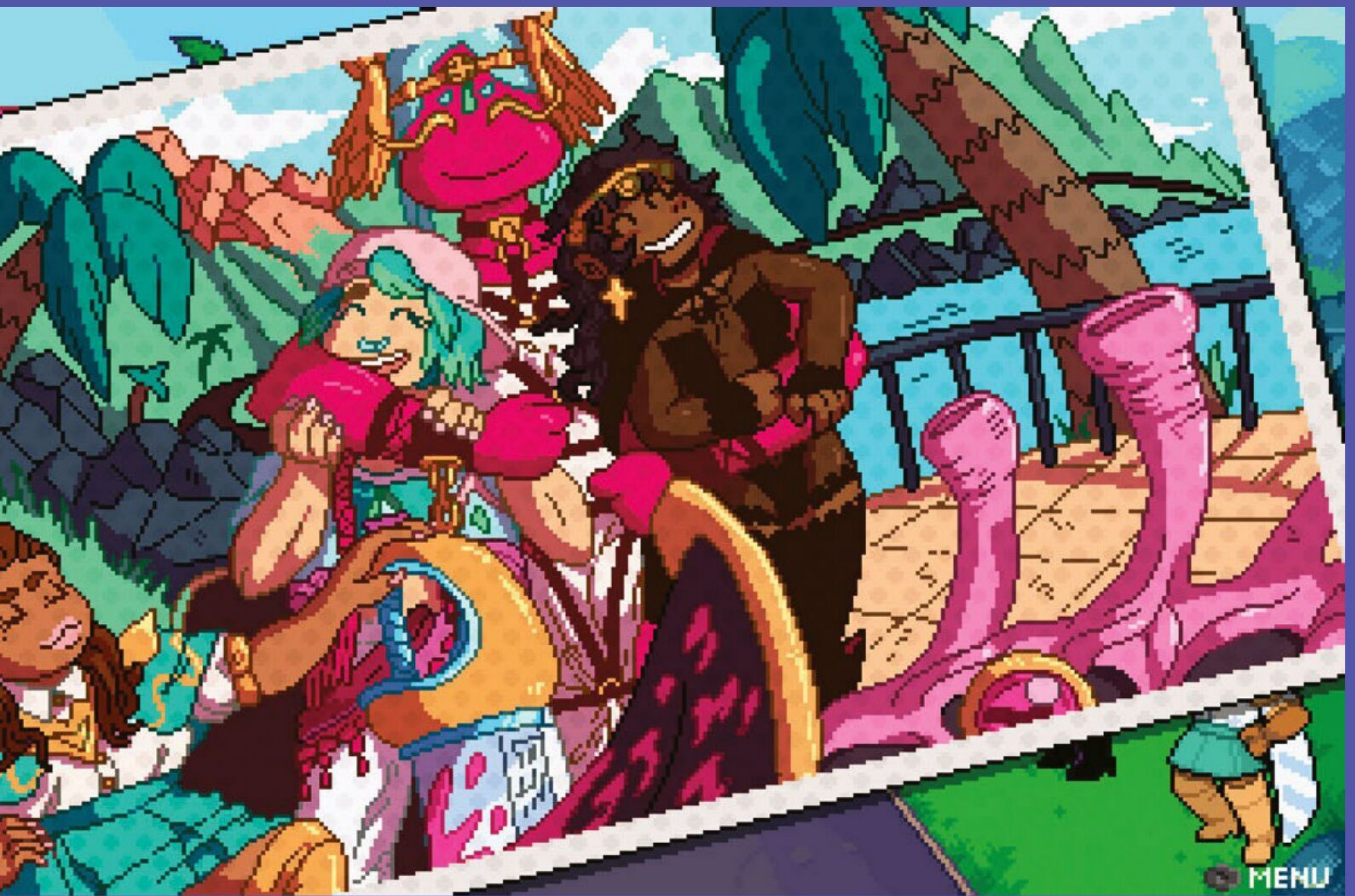
### DO ...

...try to finish something. As Thyer adds, making your first game a blow-by-blow homage to *Dragon Age* is a recipe for burnout.

### DON'T...

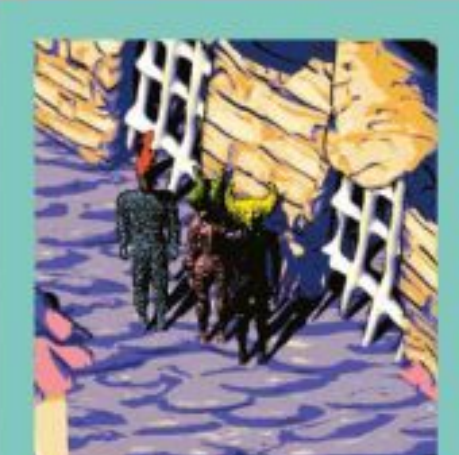
...get too comfortable with the town/dungeon loop. "Try to fit in special scenarios with a twist," says Robert Boyd. "*Final Fantasy VI* was great at that."





BELOW LEFT: A good foil for *Undertale*, *OneShot* casts you as a lost child trying to restore the sun, and is a regular tear-jerker.

LEFT: *Golden Rays of Sunshine* is a sorrowful GameBoy-style RPG with no combat, which evokes a war-torn world in a few sentences.







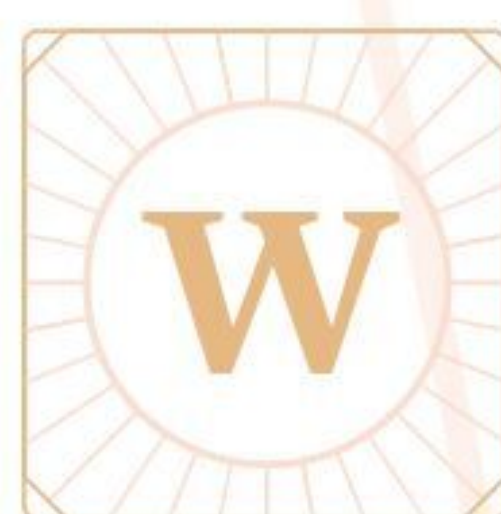
# SANDS

# OF TIME

A masterful sci-fi adaptation that shaped the future of the RTS? That would be **DUNE II**

*By Will Freeman*





When Frank Herbert began to pen the first Dune novel, video games were in an entirely nascent form. In 1965,

when his iconic sci-fi work was published, a mere handful of games had been created, often for looming mainframe computers as research projects.

However, in starting to build out his world of interstellar feudal conflict, political drama, and the desperate mining of a powerful drug called 'melange' or 'spice', Herbert set in motion a series of events that would have a profound influence over the real-time strategy genre, and even the wider gaming landscape.

Herbert's tale initially appeared as a run of serialised pieces in Analog Science Fiction and Fact magazine. Soon after, Dune was released as a novel, which would in turn inspire numerous sequels written by Herbert and later his son. Such was the first book's popularity and influence on science fiction that it inevitably attracted the attention

of Hollywood. Though, as it turned out, the vast and intricate setting Herbert had spun from words was far from easy to adapt into a celluloid release. Over the years Dune movies have been panned and canned, with David Lynch even disowning his infamous 1984 film version. In fact, it was 2021 by the time a Dune movie arrived that most felt was worthy, with director Denis Villeneuve at the helm.

#### A TALE OF TWO DUNES

Games, meanwhile – with all their interactivity, intricacy, and freedom from linear storytelling – proved to be a little more suitable when it came to communicating the spirit and tone of Herbert's creation.

Not that the effort to make a Dune game started flawlessly. Developer Cryo's MS-DOS title *Dune* was plagued by a hellish development. Thanks to a somewhat bewildering series of contract complexities, divided opinions, publisher acquisitions and other business shenanigans, it was almost cancelled. The story goes that when Cryo's game looked certain to derail from its production schedule, Virgin turned to

ABOVE: RTSes have come far – yet *Dune II* set so much in place 30 years ago.

Las Vegas outfit Westwood Studios to take its own shot at crafting a title based on both Herbert's novel and Lynch's film. Cryo then convinced the publisher to proceed with their release, and the quietly brilliant blend of adventure and strategy made it to the public via Virgin in 1992.

But then something extraordinary happened. Virgin proceeded in publishing Westwood's version – also in 1992, as *Dune II: Battle for Arrakis* (or *Dune II: The Building of a Dynasty* in the US). Was it a sequel? It might have been presented as such, but the games took very different approaches. *Dune II*, perhaps, just made it over the finish line in second place.

Regardless, Westwood's game became a very important release. It wasn't the first real-time strategy title, but confidently built on the groundwork laid by RTS and MOBA genre pioneer *Herzog Zwei*.

#### THE ARCADE RTS

Westwood reportedly openly credited Technosoft's curious blend of 2D action game and strategy title as a core inspiration over *Dune II*. A Mega Drive exclusive released in 1989, >>





Herzog Zwei might best be described as a 'proto-RTS', and presented the case for bringing real-time elements into strategy games. Technosoft's devs gracefully explored ideas like real-time resource management and unit commands, while its core concept was focused on advancing towards the heart of enemy territory. Crucially, though, players interacted with the game's systems by piloting a single starfighter, shmup style. *Herzog Zwei* remained deeply rooted in conventions from arcade gaming.

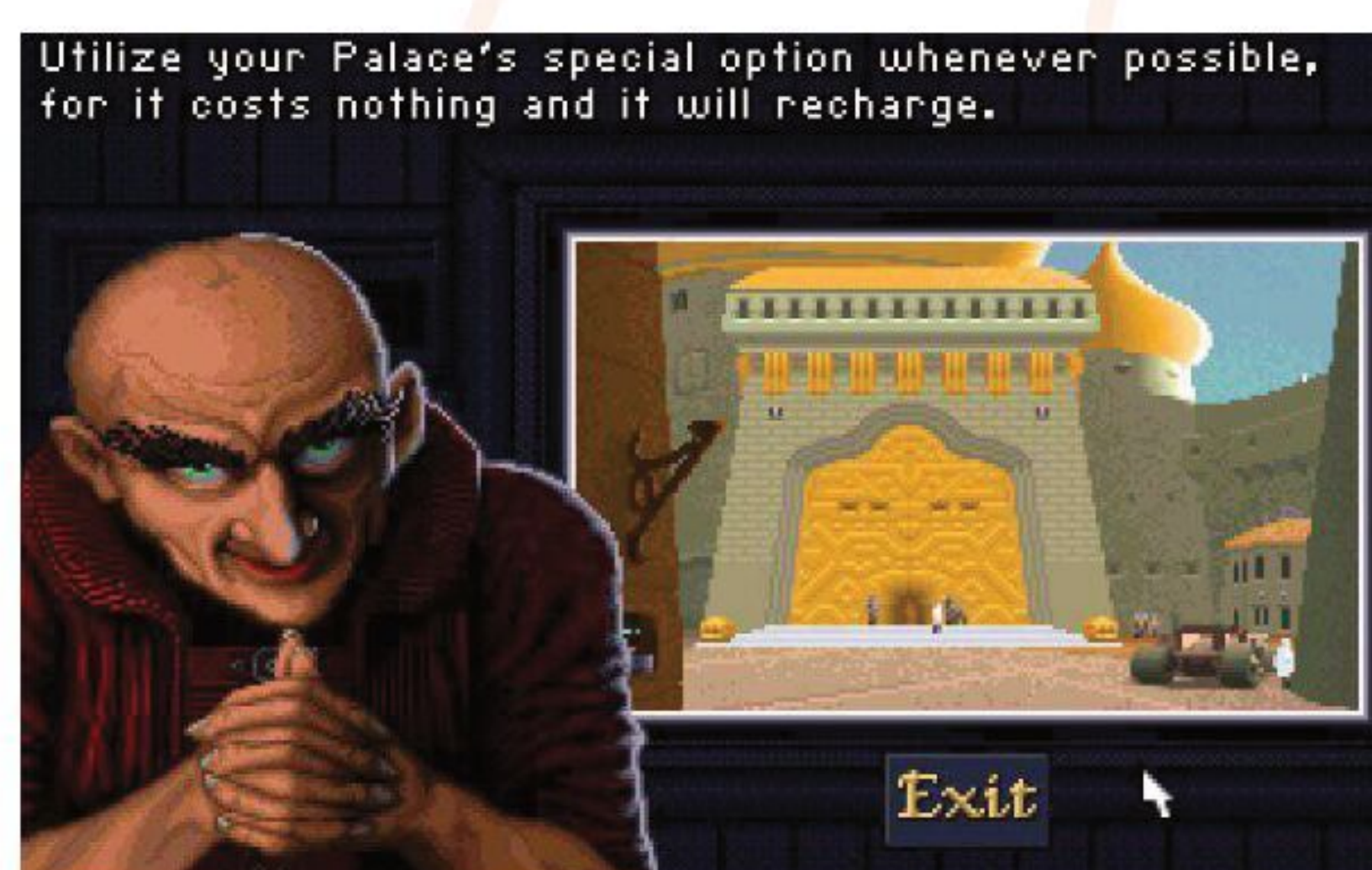
As such, it was *Dune II* that really established what an RTS could be, popularising the genre and establishing design conventions that were eagerly embraced by the teams that would build seminal works such as *Age of Empires*, the mighty *Warcraft* franchise, *Total Annihilation*, and Westwood's own *Command & Conquer* series. In turn, those games and others shaped by *Dune II* would have significant roles to play in progressing the RTS form, and even the emergence of contemporary online fandoms, the notion of massively multiplayer online games, titles maintained as live entities and even the snowballing phenomenon

that is esports. Let's be clear. It would be a substantial overstatement to credit *Dune II* with directly inspiring what esports has become; and yet Westwood created something that has a tremendous legacy, and a role to play in so many of the trends currently at the front and centre of what the modern gaming medium is.

#### PAPER PROTOTYPING

*Dune II*'s impact on gaming is founded in a simple notion. Westwood made a very good, truly innovative game with some brilliantly rewarding, elegant systems at its heart. Yet it was about more than that, and Herbert himself likely deserves a good dose of credit. The author wrote into being a world that had all the constituent parts of an RTS; warring factions, coveted resources, distinct rival cultures, political tensions, competition, and an obsession with harvesting the supplies of claimed lands.

Westwood, in turn, spotted an opportunity to build a game that captured the heart of what *Dune* was; not its winding narrative, or host of characters, but its very essence. While Cryo's game loosely followed



ABOVE: Granting opposing sides distinct abilities and options set a standard for the RTS genre.



the narrative of the book and film, and was clearly informed by a sincere love of Herbert's work, Westwood stripped the plot right back and concentrated on the premise of controlling the territory of the planet Arrakis; the only place in Dune's fictional universe where the all important spice can be found.

Some years earlier Westwood producer Brett Sperry was at work on the Dungeons & Dragons branded RPG *Eye of the Beholder*. An idea formed in his head, and he couldn't shake it. He wondered how he could replicate *Eye of the Beholder*'s real-time action in a game constrained to a singular top-down viewpoint, with more of an emphasis on strategy and resource management. He and his peers even worked on a scattering of prototypes. But it was talk of working on a *Dune* title for Virgin that finally let Sperry fully develop his concept for a new type of game.

The combination of Herbert's meticulously constructed world and Sperry's notion that real-time and strategy could be blended formed a perfect combination. The novel gave Westwood all the elements for a real-time strategy game that greatly elaborated on Technosoft's effort

### HOUSE RULES

*Dune II* pits three Houses – Atreides, Harkonnen, and Ordos – against one another in a battle to claim the

## DUNE BUDDIES

### Dune II's sequels and remakes



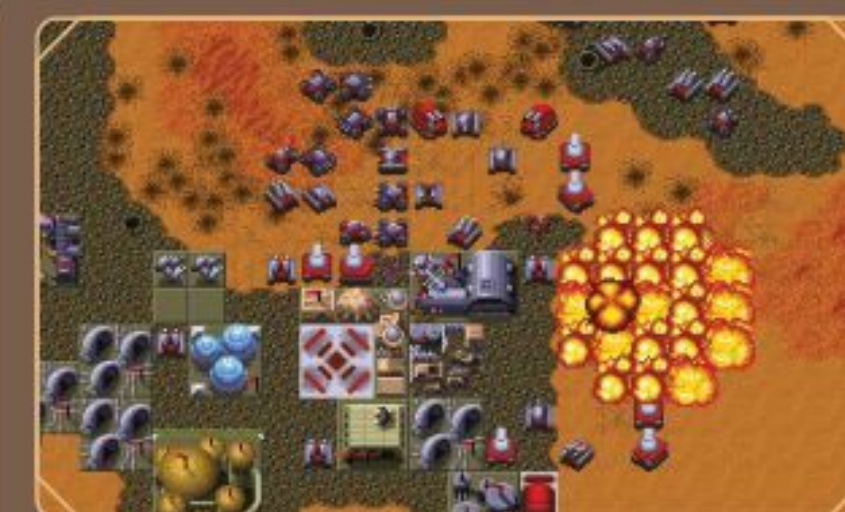
#### DUNE 2000 1998

A partial remake and semi-sequel, *Dune 2000* took much inspiration from *Command & Conquer*, but failed to rival *Dune II*'s quality.



#### EMPEROR: BATTLE FOR DUNE 2001

*Dune 2000*'s direct sequel complied to Westwood's RTS template. It wasn't perfect, yet had capacity for fun.



#### DUNE LEGACY 2003

One of several fan remakes, *Dune Legacy* gently modernises *Dune II*'s systems while endeavouring to preserve the gameplay.

**FAR LEFT:** *Dune II*'s visuals haven't aged perfectly, but its tight presentation made it a joy to play.

**BELOW:** Aside from pioneering the RTS genre, *Dune II* also featured rather lovely pixel art.

profitable lands of Arrakis. Having picked a side, you are initially tasked with missions that guide establishing a base of operations on the famously sandy planet, while mastering spice harvesting and combat. Over time the focus shifts to attacking enemy infrastructure and territory, gradually advancing on the ultimate prize of occupying all of Arrakis. The result was a compact RTS that bristled with pace and shifts in dynamic – and a game that felt very much like an extension to the original novel.

## OVER TIME THE FOCUS SHIFTS TO ATTACKING ENEMY INFRASTRUCTURE

*Dune II*'s real accomplishment, though, was in introducing so many new elements that worked cohesively together. There was the asymmetrical nature of the different sides' available military hardware and units, and the

option to establish your starting base anywhere of your choosing. Players adored the ability to gather resources to enable unit building, and the

system of structural dependencies. The latter ensured that to create the most desirable units, you have to go through a chain of constructions, starting with the most basic buildings. The 1993 Mega Drive port would even present an early example of the context sensitive cursor.

In a single game, Westwood had taken the RTS genre forward an astronomical distance, and set a template that still defines the form today. The elements it brought together have become stalwarts in all kinds of other genres, cropping up in MOBAs, MMORPGs, city-builders, action RPGs, and so many other forms.

Strangely, while genre-devotees know and cherish what *Dune II* is, it has never become a household name like *Warcraft*. That may change, though, with *Dune: Spice Wars* recently released to a bounty of praise. And yet *Dune II* might well still be the most fitting Dune adaptation there is, because it places you in Herbert's world, rather than his story. And that world, it turned out, was the perfect blueprint for the most influential RTS there has ever been. ■





# WE ALL PLAY GAMES

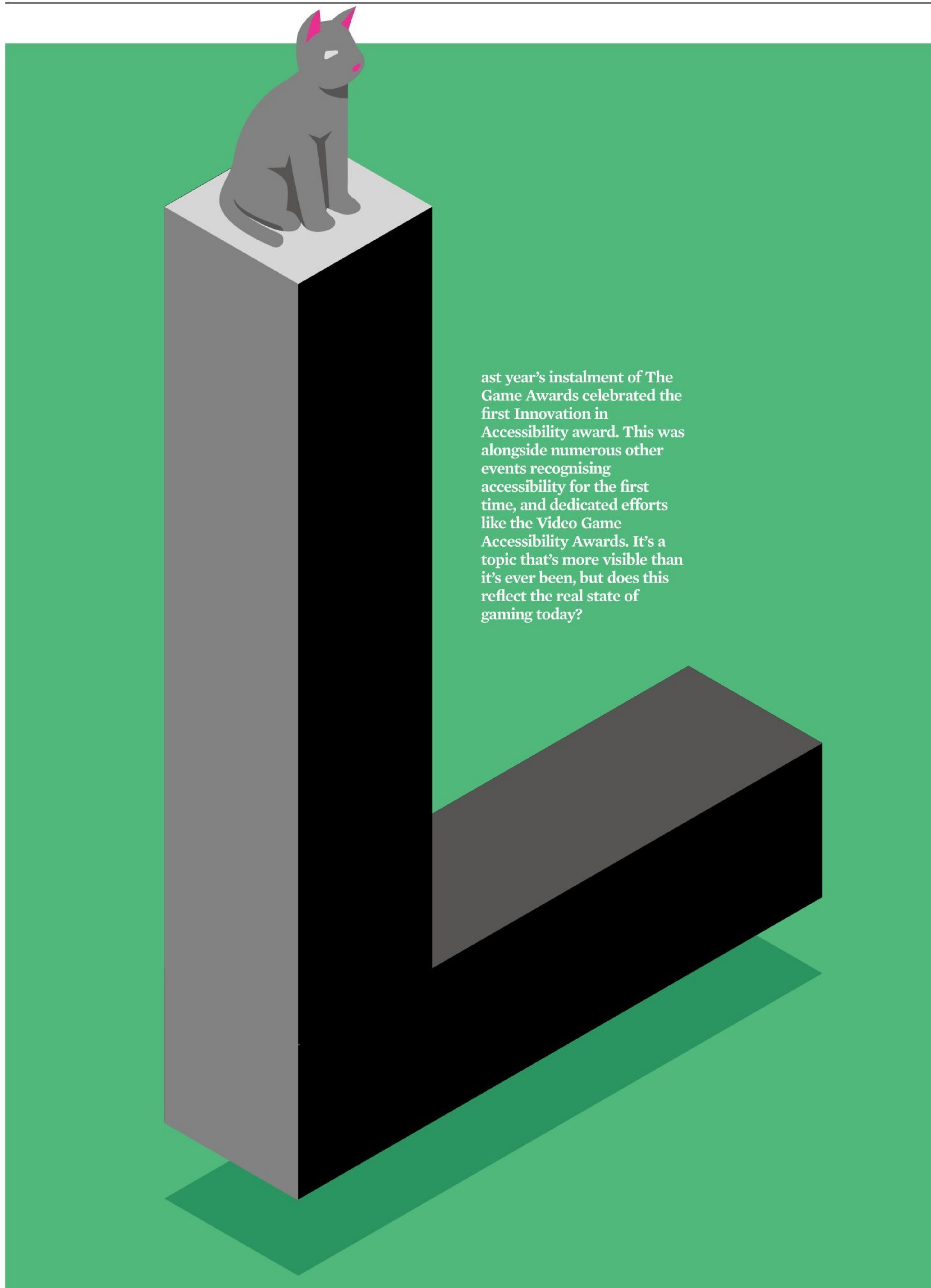
From indies to blockbusters, developers  
are striving to include disabled players  
now more than ever

*By Ruth Cassidy*







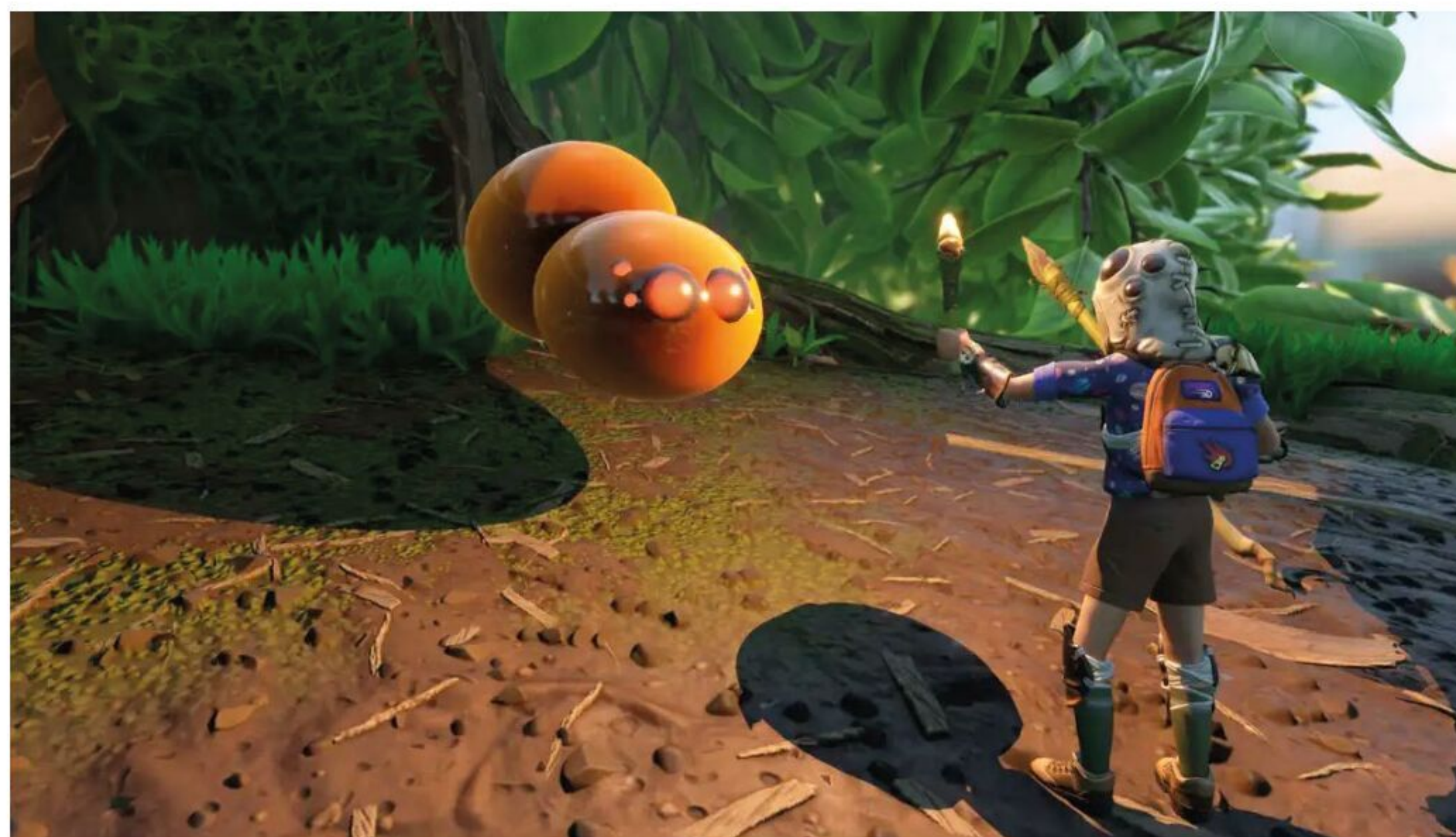


ast year's instalment of The Game Awards celebrated the first Innovation in Accessibility award. This was alongside numerous other events recognising accessibility for the first time, and dedicated efforts like the Video Game Accessibility Awards. It's a topic that's more visible than it's ever been, but does this reflect the real state of gaming today?



While we might talk about some games as being ‘accessible to new players’ or an ‘accessible entry point to a niche genre’, accessibility here means access for disabled people – who make up 20% of working age adults in the UK, and 10.4% in the US. So while mainstream games awards may have their flaws – rewarding some of the industry’s darker aspects like crunch and abusive management – it’s still meaningful when they recognise efforts to remove the barriers that might exclude us.

Accessibility doesn’t only make things better for disabled players, however. David Tisserand, Ubisoft’s senior accessibility manager, shared on Twitter that around 95% of players leave



## “FOR US, ACCESSIBILITY IS ABOUT REMOVING UNINTENTIONAL BARRIERS”

subtitles on when it’s the default setting, and around 75% turn them on in the options at least once. This is a significantly higher percentage of the population than those who have hearing loss. Over email, Tisserand says, “For us, accessibility is about removing unintentional barriers so that as many players as possible can enjoy our games.” And concerning subtitles, that includes people with difficulty processing audio, noisy roommates, babies they can’t wake up, crunchy Doritos – the list goes on.

### SPIDER SLIDER

Ubisoft took two nominations for Innovation in Accessibility with *Watch Dogs: Legion* and *Assassin’s Creed: Valhalla*, but another nominee was Obsidian’s Early Access survival game, *Grounded*. It sees players shrunk down to bite-size teen adventurers – an unnerving experience if the thing threatening to bite you is a spider. *Grounded*’s Arachnophobia Safe Mode made news last year for being the first game of its kind to buck the trend of forcing spiders on



**TOP:** *Grounded*’s least spider-y spider removes all legs and furry textures.

**ABOVE:** *Assassin’s Creed: Valhalla* full key rebinding was praised by the first Video Games Accessibility Awards.

players with a phobia of them, allowing you to remove disturbing elements of their design or, at the top level, turn them into cute blobs.

*Grounded* also highlights the way that accessibility can be enhanced in even its more basic structures, like its ‘talk to me’ feature: a text-to-speech setting for its UI. As senior programmer Brian Macintosh explained, it wasn’t initially his idea, but something publisher Xbox Game Studios encouraged. “I didn’t initially understand how someone who is blind could even play *Grounded*, but it turns out there are many people who can see well enough to navigate the game but have trouble reading text for vision or even cognitive reasons. For them, this feature takes the game from ‘barely playable’ to ‘quite playable’ which is a huge win.”

Without downplaying the seriousness of phobias, most of us can relate to finding spiders unsettling – I used the slider myself when it turned out my tolerance for the critters strongly depended on our relative size being biased in my favour. While this approach is inarguably

## NOT JUST AAA-CCESSIBLE

Indies are leading the charge of accessibility



### HADES

*Hades*’ introduction of God Mode was well-loved, ensuring disabled players didn’t hit a wall in the roguelike with its incremental increase of Zagreus’ demigod defences.



### PARADISE KILLER

Detective game *Paradise Killer* is stylish, but not murderous on the eyes – letting players disable the psychedelic backgrounds that could cause vertigo or motion sickness.



### CHICORY: A COLORFUL TALE

*Chicory* is a notably colourblind accessible painting game – and it also allows players to disable ‘wet sounds’, which can be bad for players with misophonia.





## DISABLED PLAYERS ARE BEING INCLUDED WHO DEVELOPERS DIDN'T EXPECT TO BE PLAYING THEIR GAMES

» innovative, *Grounded*'s text-to-speech option being a first for Obsidian represents something no less notable. Disabled players are being included who developers didn't even expect to be playing their games.

### WATCH THIS

Beside industry giants Obsidian and Ubisoft, an unexpected nominee for Innovation in Accessibility was indie creation *HyperDot*. The game features only one mechanic: to move, or more precisely, to dodge out of the way of the polygons flinging themselves at you at high speed. *HyperDot*'s design was always centred around flexible approaches, but creator Charles McGregor credits a friend of his being gifted a Tobii Eye Tracker with the moment he realised he could make the game far more accessible.

"After I got [eye tracker compatibility] in there I was like, 'Oh, if you can't hold a controller, if you have a motor disability, you would be able to actually play all of *HyperDot* with it,' and that really was the start

of, 'Oh yeah, I'm going to actually take this a little bit more seriously and look into this.'" From there, his publisher Glitch supported him to reach out to accessibility consultant Cherry Thompson, as well as seek feedback from disabled streamers.

Watching streamers play the game was the first time McGregor had seen the game played outside of

the build on his own computer. "Anytime that somebody couldn't play the game, whether it be a physical disability, or whether it be the game was just too challenging or something like that, that was just a gut punch, like, 'Oh man I don't want you to not be able to play the game.' I think that that was a huge motivator for me." As a result,

## WIN SOME, LOSE SOME

*Accessibility is improving – but for some it's hit-and-miss*



### CYBERPUNK 2077

Last year's *Cyberpunk 2077* needed a rapid hotfix after journalist Liana Ruppert discovered multiple seizure triggers in the game, including mandatory braindance sequences.



### RESIDENT EVIL: VILLAGE

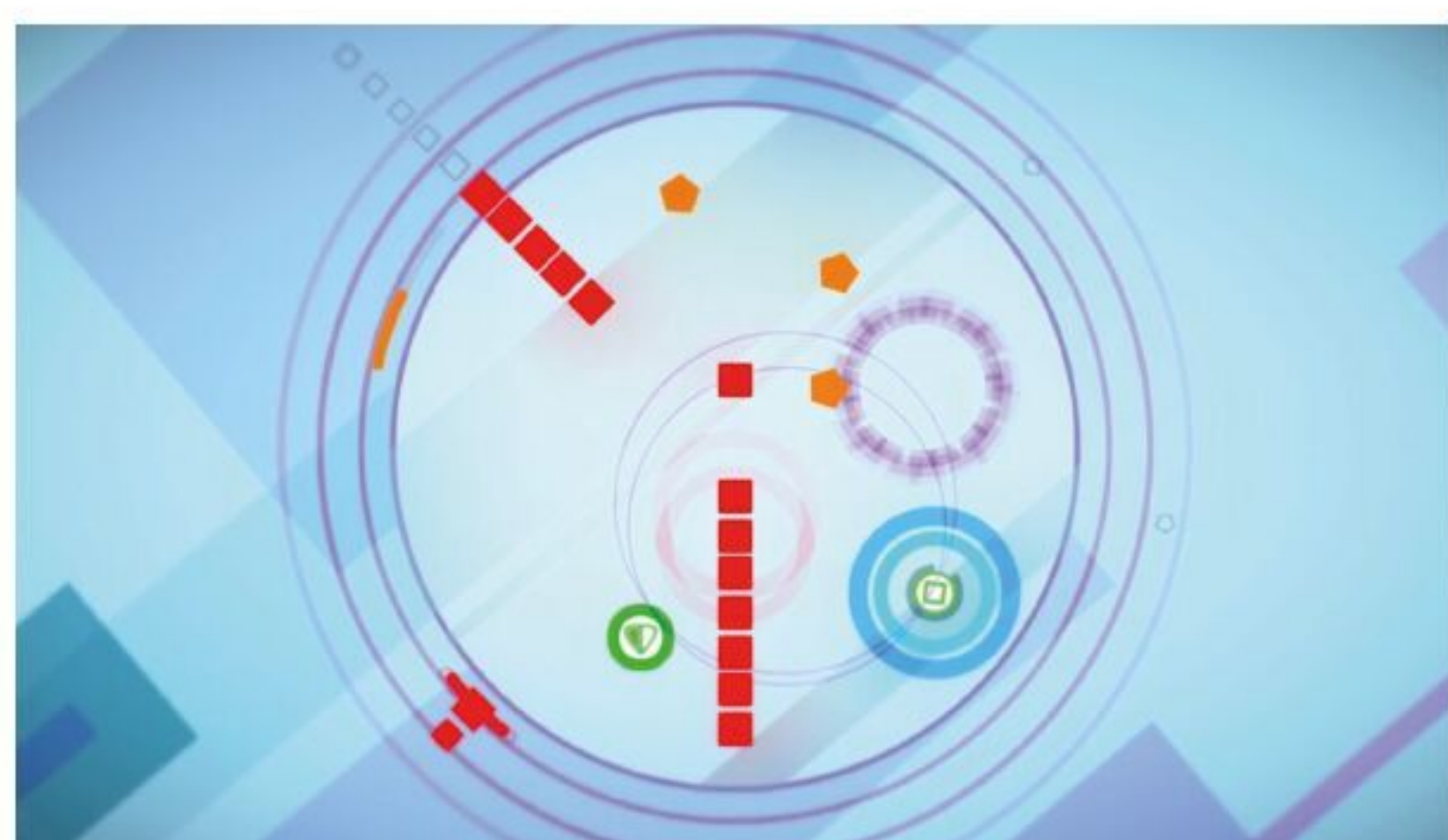
Capcom's latest entry in its iconic horror series neglected to caption its sound effects, leaving the game more stark than spooky for deaf players.



### ASSASSIN'S CREED: VALHALLA

Accessibility failures and successes can come from the same game, such as *Assassin's Creed: Valhalla*, which doesn't subtitle Eivor's frequent self talk.





*HyperDot* offers support for seven unique controllers – including tilt and touch, as well as eye tracking.

### MORE THAN LEDS

Support for alternative input is important because PC gaming is not, out of the box, accessible for everybody. Regardless of the content of any game, a mouse and keyboard can itself be a barrier. Alternative methods of input aren't a solution to inaccessible game design – but at the same time, even the best designed game is inaccessible if you can't use a PC. But, with PC gaming you can play with whatever peripherals you prefer, whether it's a glowing rainbow mouse or no mouse at all.

Charity AbleGamers helps connect disabled players with the technology they may need to play. Their objective, as stated on their website: "Our mission is to enable play, in order to combat social isolation, foster inclusive communities, to improve the lives of people with disabilities." Disabled players can request support, and access individual peer counselling to help assess what they might need to adapt, with AbleGamers then also providing that equipment for those in financial need. The site also hosts a self-help library that breaks down what technology is available for impairments such as gaming with one hand, or a visual impairment.

**TOP:** *HyperDot* is partly so accessible because it has only one player action: move.

**BELOW:** The Xbox Adaptive controller is one of the more flexible options for alternative controllers.

Technology solutions vary from specialist controllers (like the GrizPaw, which advertises being the fastest one-handed controller), to customising the Xbox Adaptive Controller with the best switches for your needs. As described by the AbleGamers site, "You can find switches for a variety of situations including, light touch, rigid, and even ones called 'twitch switches,' which can be placed on a muscle such as your calf or eyebrows."

There are also players for whom alternative forms of input don't make PC gaming more accessible at all, as it's the required posture that is the issue. "Because of POTS, sitting upright for long periods like you normally would in a desk chair can make me dizzy and tired," explains Els White, director of Spider Lily Studios, who keeps his chair reclined fully back, and has his monitor attached to an adjustable arm to tilt it in-line with his face. From this setup, he both plays games and works on his own. "My keyboard goes on a raised lap rest, and my mouse on a table beside me. Much easier on my heart!"

### PAINFUL PLAY

Accessibility isn't a one-size-fits-all solution, as not all disabled people have the same needs. For some, there aren't adjustments they can make – PC gaming is simply less accessible than the alternatives. "I tend to avoid PC games because after working all day at my computer, sitting there for even longer causes significant back and joint pain," says Courtney

Craven, editor in chief of accessibility review site 'Can I Play That?'. They've also tried playing PC games with a controller instead of a mouse, "But that always seems to result in poor posture and again, more pain."

Issues like pain and other sensory and motor impairments are often the first thing we think of in terms of accessibility. But, like *Grounded*'s Arachnophobia Safe Mode, *Ikenfell* makes space for inclusive mental health. Creator Chevy Ray says, "[O]ur sensitivity consultation team [Joanna Blackhart, Jeriko Green and Aivi Tran] made a really good case for adding in an option to enable context-sensitive content warnings in the game."

These content warnings appear in-game and before skippable cutscenes that contain potentially triggering content, such as self-injury. "This is an extremely rare feature for any game to have, even in AAA companies that take accessibility very seriously. The feature has been immensely well-received, so I hope it's a feature more companies adopt in the future."

*Ikenfell* is a colourful turn-based tactical RPG about magical students and pettable cats. Cast a multitude of spells, and hit the button at just the right time to land a great hit and do critical damage – or mitigate it, when you're defending. Notably, you can toggle how much timing affects gameplay (if at all). For players who would still find combat inaccessible, they would typically have to not play the game – but in *Ikenfell* they can take the option to instantly win fights >>





➤ at any moment. “One of these options has them playing through the game and getting to experience the rest of its art, music, sounds, puzzles, and story. The other does not. I think it’s probably quite obvious which of those two things I consider the superior choice.”

### SOULS-DISLIKE

*Ikenfell*’s skippable combat highlights the debate about the way games are ‘supposed’ to be played. Games that are well loved for being difficult – you know the ones – are often passionately defended by their fans because they’re supposed to be a challenge. The mastery of the game, and its mechanics, are its own reward, and making any part of it skippable (or easier) in the name of accessibility would defeat the point, goes the argument.

A counterpoint: *Frostpunk* is a difficult game, and I’ve poured tens of hours into it trying to get the best possible outcome for every single campaign, for fun. When playing games like *Dishonored*, I set specific challenges – don’t be seen and don’t use powers and loot all the art, etc. I like being challenged, but that doesn’t translate to, say, the precise timing required of *Hollow Knight*. The Mantis Lords move faster than I can see.

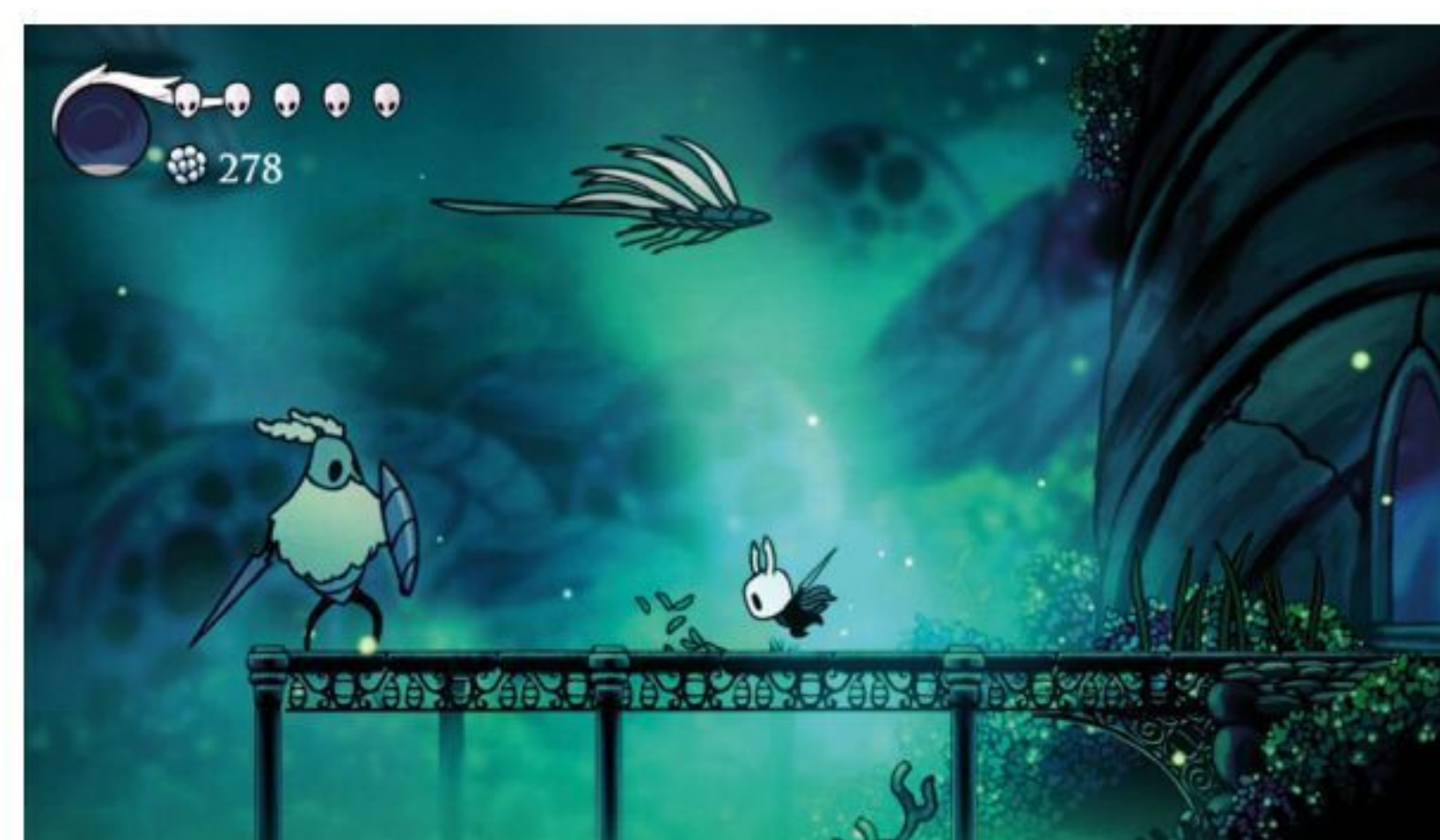
‘Difficulty’ is a broad concept, so it’s hard to pin down how it relates to accessibility. When a specific barrier is ‘making’ a game difficult, addressing that barrier is often a more straightforward solution. At the same time, what we think of as

an ‘easy mode’ is a shorthand for a set of tools that reduces a game’s demands. Those tools are still accessibility tools, particularly for players with chronic fatigue, pain, and/or impaired reflexes.

As an alternative, some difficult games in recent years have opted to implement assist modes – platformer *Celeste*’s being one of the most well-known. Rather than dropping mechanical complexity by an arbitrary level, players can fine tune effects as needed like Madeline’s stamina, or number of dashes, allowing the player more time to think or to course correct. Any assist mode is tailored for the gameplay it’s accompanying – compare an invulnerable Madeline climbing through the murder-fungus to *Control*’s Jesse, flinchingly hit by every bullet even when invincible.

Some players maintain that difficult games without any way to make them more accessible are ‘the developer’s vision’, but accessibility specialist Ian Hamilton explains that this is one of the most common misconceptions that players have about how game development works.

“What designers have in mind for their players is really about an emotional experience. And that thing on the disc or that you’ve just downloaded is not the vision, it’s not an experience in itself. It’s just a means to an end, a framework put in place to try [to] let players have that kind of experience. The experience only comes into existence through interaction with the player – and players are a varied bunch, so



**TOP:** *Hollow Knight*’s unwinding environmental storytelling is beautiful – but locked behind inaccessible gameplay.

**ABOVE:** Eerie action-adventure *Control* introduced its assist mode a year after its initial release.

whether what they experience matches the designer’s intent depends on how that framework interacts with their own personal needs, abilities and preferences.”

‘Difficult games’ aren’t a monolith, and no one game is difficult for the same reason as another. Whether it’s to challenge players, for narrative theming, or to encourage players to fully juice a combat system, every difficult game wants the player to have a certain experience. That experience does not inherently need to leave out disabled players.

### STARTING LINE

We might celebrate innovations in accessibility in games, but that only suggests that there are leaps and bounds to go – even if we are making them. “The state of the field is quite unrecognisable compared to even a few short years ago,” Hamilton says, reflecting on his 16 years of experience in the industry. “It wasn’t long ago that a single mainstream game including a single accessibility accommodation was big news, and now it’s hard to find any big name game that doesn’t have a swathe of considerations, and indies are right there at the forefront of progress too.

“But we’re still really only at the start. There hasn’t yet been any AAA that has managed to nail all of the basics, things like remapping, subtitle presentation, colour-blindness, text



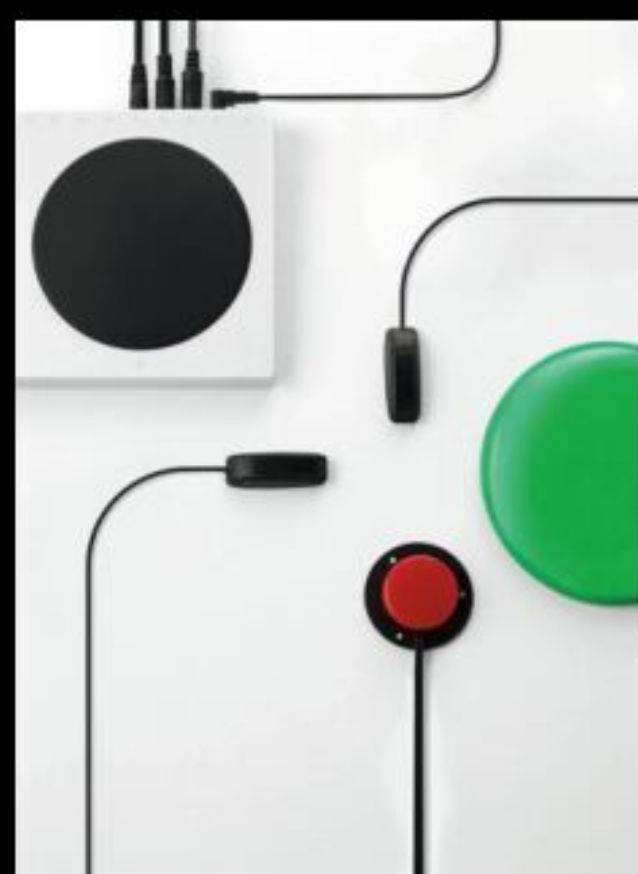




**“THE STATE OF THE FIELD IS QUITE UNRECOGNISABLE COMPARED TO EVEN A FEW SHORT YEARS AGO”**

## FIX THIS PLEASE

*The four most complained about accessibility issues*



### REMAPPING

Remapping (or rebinding) has a huge number of accessibility applications, from macros and alternative controller use to remapping individual keys that are uncomfortable to use. Like thumbstick-clicks, which are the worst. As it stands, too few games offer robust options for players to make these changes, which can exclude many.



### TEXT SIZE

Text in videogames is too small, and therefore, difficult to read. This is a universal design complaint that comes from people who wouldn't consider themselves as having vision problems (along with those who explicitly do). Some games have large text, or text size options – but I've yet to see the complaint that text is too large.



### COLOUR BLINDNESS

Many games exclusively use colour to communicate important information, from using coloured silhouettes to indicate enemies and friendlies to featuring colour-based puzzle solutions. For the large amount of players who can't differentiate those colours easily (or at all), that information is lost. Friendly fire, everywhere.



### SUBTITLE PRESENTATION

There are many factors that affect whether subtitles are actually useful or not. Tiny text is a frequent offender, along with putting more text on-screen than can be easily read at once. And once that's resolved – is it made clear who's speaking? Where the sound is coming from? Is the call coming from inside the house? We need that info.

size, and effect/camera intensity. And we are a very very long way from getting beyond that to where [we] really need to be, which is any gamer being able to pick up any game and have a reasonable expectation that they'll be able to play, that they won't be unnecessarily locked out or have an unnecessarily poor experience.”

The relative accessibility of a game is a hard thing as a consumer to predict. I can pick up a physically undemanding adventure game and find myself waylaid by flashing lights and tiny tiny text, or demo an upcoming action game and find incredibly comprehensive difficulty settings. The one thing consistent with most people I spoke to, however, was that awareness of accessibility in development has increased hugely in only a short amount of time. Developers care, and there's a meaningful push for games to be more accessible and more inclusive. With the development cycle of games being the length it is, I'm excited to see what will be winning accessibility awards in 2022. ■



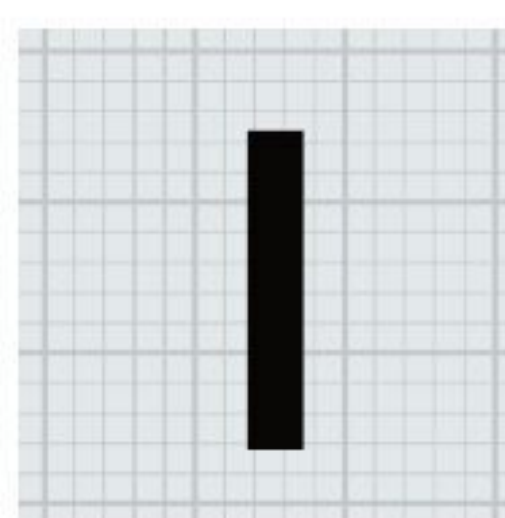




# THE MAKING OF SPLINTER CELL: CHAOS THEORY

As the series' return sneaks up on us, we debrief  
Sam Fisher's finest outing with its creators

By Robert Zak



**I**n a nocturnal world of oily shadows, where darkness cuts into damp surfaces illuminated by solitary swinging lightbulbs, the green-goggled man is king. By the time the third entry in the *Splinter Cell* series, *Chaos Theory*, was released in 2005, we were already well acquainted with Sam Fisher's skill set; with just a year between this and his previous outing, we *thought* we knew what to expect, and expectations were high.

But in that short time between the two games, the industry straddled a technological revolution like Sam Fisher straddles a narrow corridor

with his split-jump; unthinkable things became possible through untapped tech like normal mapping and HDR lighting, playing right into – while also shaping – Ubisoft's vision for *Chaos Theory*. This wouldn't just be the third iteration of an already excellent series, but one of the greatest stealth games of all time.

After *Pandora Tomorrow* was made by Ubisoft Shanghai, development on the third game returned to where it all began – Ubisoft Montreal. The focus at this time was on making games work on the original Xbox, and the presence of former Nvidia chip designer Danny Lepage as a programmer on the game meant the team had insider knowledge on how to maximise the console's graphical horsepower (and in turn not restrict the PC version). >>



» “Danny understood from a deep engineering perspective how the Xbox video card worked, unlocking some of the potential for shaders, normal maps, things like that,” says the game’s lead designer Clint Hocking. “None of us had ever seen a normal map before. John Carmack was still writing forum posts trying to describe it. Then when we started to see that stuff we were like, ‘Oh my God, this looks amazing!’ It totally upended our understanding of what game visuals could be.”

### CONTROLLED CHAOS

Normal maps, which ‘unflatten’ textures by giving them the illusion of depth and distorted reflections from light sources, became a must for *Chaos Theory*. Meanwhile, the team’s rendering framework – facilitated by the power of DirectX 9 – was so powerful at rendering reflection effects that it set something of an elemental theme for the entire game: water. “The reflections were so unique that we felt they could become part of the game’s identity, the same way that shadow casting was an identity of the original *Splinter Cell*,” producer Mathieu Ferland tells me.

*Chaos Theory* foregrounds its aquatic theme right from the start – a lighthouse off the coast of Peru where a computer programmer is being held hostage. Weaving your way through a cave system glistening with moisture, you emerge into spitting weather conditions, at which point Sam’s distinctive rubberised stealth suit

takes on a glossy sheen (mercifully, not a factor in your visibility to enemies). During this mission, you can see enemies through the condensation-blurred glass at the top of the lighthouse, and go through damp tunnels where the walls glisten with humidity and look so coarse that you feel you could run your hands along their uneven surface and come away with moisture on your fingertips.

Set in the clammiest parts of New York, Japan, and areas around the South Pacific, *Chaos Theory* is a game obsessed with wetness, and takes every opportunity to show off the verisimilitude proffered by the tech

of the time, and the studio’s ability to implement them. Crucially, all these technical advancements were in service of the *Splinter Cell* stealth experience, which would also make some serious leaps in *Chaos Theory*.

### SIM PULL

Clint Hocking was inspired by immersive sims, particularly *Deus Ex* and what he would in a later essay call its “meaningful agency across the narrative, progression and input levels of play”. With the series’ stealth foundations well established by 2004, Hocking saw an opportunity to start exploring some of those more ambitious design philosophies.

The last thing an unobservant guard fails to see before they die.



## LESSONS IN STEALTH

The next Splinter Cell will need to build on its best tricks

### THROWN OBJECTS

In *Chaos Theory*, the AI doesn’t just doggedly investigate the place a thrown object lands, but if they see it in flight they’ll first investigate where the object came from. Clever.

### AI ON EDGE

The more suspicious sounds an enemy hears, the more anxious they become; do a little rustling in the bushes and they’ll dismiss it, but do it a few times and they’ll come a-snoopin’.



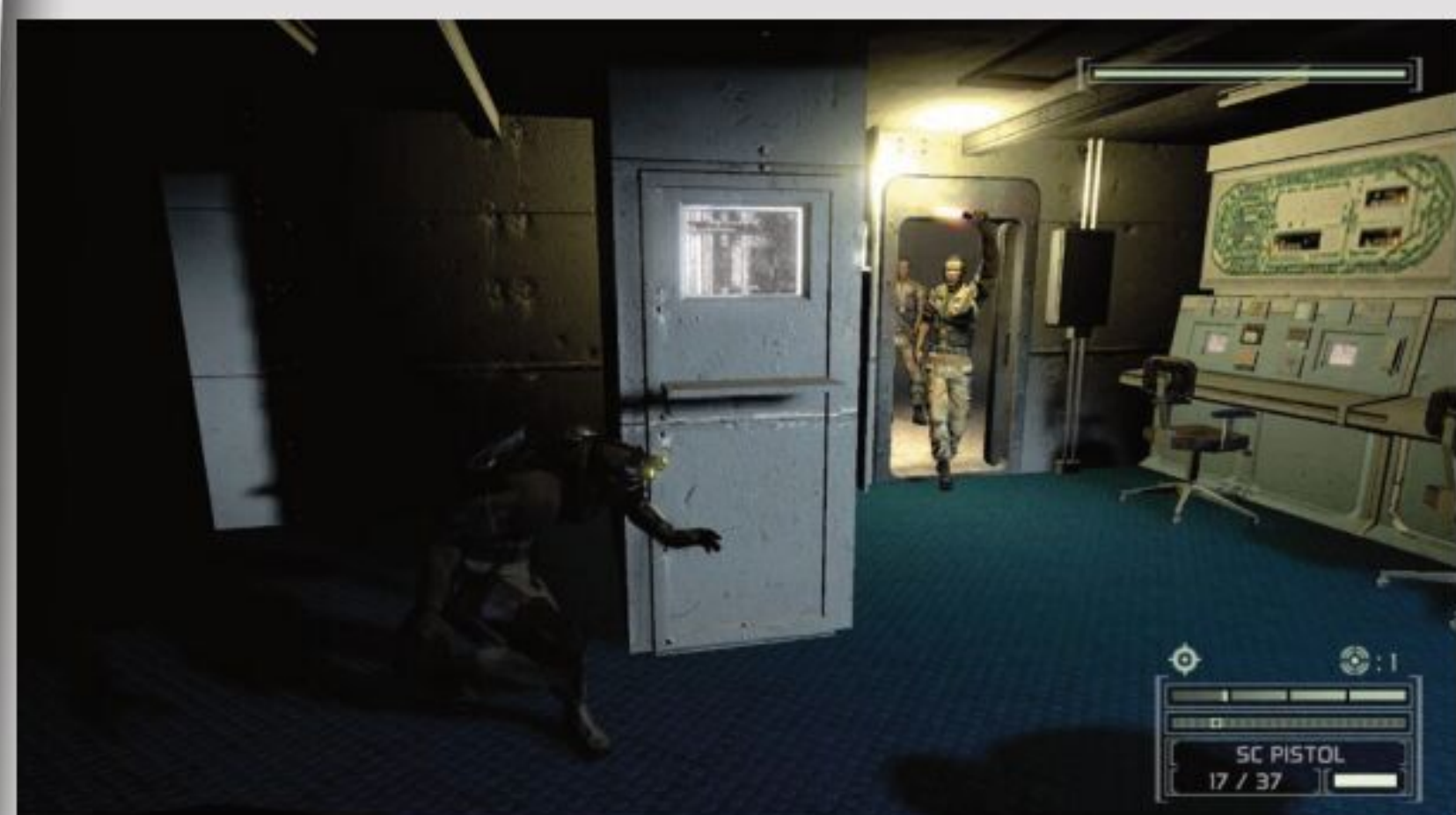
### LIGHT LOGIC

Every source of light affects your visibility – from overhead bulbs to glowing computer screens and the intermittent red flashes of a bomb you’re trying to defuse.

### REFLECTIONS

These days, games seem to have given up on making mirrors ‘work,’ but in *Chaos Theory* enemies could spot you through mirrors. Surely it’s time for mirrors to make a comeback...





**ABOVE:** Sam's anti-smoking campaign gets started in earnest.

**FAR LEFT:** *Chaos Theory* utilised breakthrough graphics tech to create a moody shadow-filled world.

At the crux of this would be doing away with the previous games' automatic game over when players would trigger alarms too many times. "It was my mandate from the very first day that there is no game over in this game," says Hocking. "The game has to carry on and it has to adapt to your actions. And that was enormously difficult. It really put a lot of pressure on the team, but thinking that way also unlocked our ability to make those things work."

This led to the rise of what Mathieu Ferland calls a 'loop of emotion': the process of keeping a player constantly engaged in a loop of slowly building tension, which may (or may not) culminate in a brief explosion of action or violence when you get spotted, which then makes way for relief when we escape or evade a scenario. Then the loop restarts and the tension builds again...

We as players had to adapt too. Without a game over to bail us out, we had to think on our feet when guards stumbled upon bodies and would start walking towards the room we were hiding in. We'd flatten ourselves against walls, try to recall escape routes through windows and vents, and rely more on specialist moves like clinging to pipes,

renowned for his experimental and often arrhythmic music that ranges from liquidy ambient beats to industrial drum & bass – was brought onboard after Ubisoft used his music for an internal gameplay video. Tobin's soundtrack was exceptional, from the disruptive snares and drum rolls that kick in when you get caught to the cool bassy twanging and spectral radio chatter of the stealth themes.

I reached out to Tobin to talk about his contribution to the game. "The motivation was to write music that was not typical for a game at the

time, in that it took its influence from both vintage film scores (like the work of Mission: Impossible theme composer Lalo Schiffrin) and what I was playing at clubs, namely d'n'b," he tells me. "The idea of music intensity adapting to gameplay was also not something that had been technically achievable to the degree

## CHAOS THEORY FORCED US TO BE TRULY PRESENT THROUGH SOME SERIOUSLY STICKY SITUATIONS

split-jumps or even sacrilegiously shooting our way out of trouble. *Chaos Theory* forced us to be truly present through some seriously sticky situations.

Sound design and music helped sustain this loop, and Amon Tobin's score was integral to that. The electronic music producer –





**ABOVE:** Another characteristically damp assassination.

**FAR RIGHT:** You can remotely (but only temporarily) disable security devices and hack computers.



» we wanted at that moment. It drew out technical innovation from Ubisoft along with creative challenges, such as making sure individual layers of a composition were as musically compelling as the sum of their parts.”

### STEALTH INSPECTOR

Expanding the player’s freedom also required expanding the level design. Whereas previous games offered multiple stealthy solutions for getting through a given room or sequence, their relative linearity made it easy for the game to highlight the threats and challenges you’d face in each section. Individual missions were conveniently broken into segments separated by loading screens, effectively wiping clean whatever mess of snoozing bodies and broken lights you may have left in your wake.

In contrast, *Chaos Theory*’s maps were seamless stealth sandboxes

which had to account for the possibility that you could enter most spaces from any angle, bypass some areas altogether, or even ‘break’ the narrative flow. You could mess around with the order you did objectives, or what angle you’d approach certain scripted scenes from, and the dialogue with Headquarters would change

**“ANYBODY IN THE TEAM COULD PROPOSE A CONTEXTUAL IDEA RELATED TO A SITUATION”**

depending on the bespoke path you carved through a mission.

But within these sandboxes were dozens of special moments, where you could slice through a Japanese Shoji wall to grab a guard from the other side, or with a meticulously placed barrel indulge in a bit of explosive Tom Cruise-style swagger.

At one point I was shimmying along a pipe when, right on cue, a guard peered through a doorway, forcing me to instinctively hang upside-down and plip him in the face with my silencer. These moments were sporadic, but broke up the stealth flow in an extremely engaging way.

Many of these seemingly incidental moments were

handcrafted, conceived even before the levels themselves and based on a giant internal repository of stickmen. “There was this documentation where anybody in the team

could propose a contextual idea related to a situation – whether it’s upside-down interrogations or pulling an enemy over a rail,” Ferland recalls. “Those ideas were coming from stickman drawings. Even if there were multiple paths, we wanted to find a way to pull the player into those scenes.”



When I ask Hocking about his favourite level, he immediately gives me the Panamanian Bank – an early mission that sees Fisher starting out in the grounds of a palatial building, and work his way in before freely exploring its vast interior. The initial approach is classic *Splinter Cell*, as you work your way up to the roof of the building and drop in through a skylight. Once you're inside, the level becomes a maze of opportunities.

### LEVEL UP

Keeping these levels seamless wasn't easy, due the lack of streaming tech built into Unreal Engine 2.5 and the high demands of normal mapping

and high-fidelity texture assets. "Breaking the levels into small pieces was going to force them to be super linear, like there would literally only be three rooms and then another level and then three rooms and then another level. So we wouldn't even be able to make the game we wanted to make," Hocking tells me. "We had to write a streaming solution, and had programmers just work full-time so that whichever way a player took through a level, you'd move through chokepoints and they're dumping textures behind you and loading textures in front of you."

*Chaos Theory* was more than just the latest 'one-a-year' iteration in a

prolific Ubisoft series, it was a peak of stealth gaming. It cast a long shadow over the series, which would later water down some of its identity by opting for a more linear, fast-paced experience (more or less parallel to when *Hitman Absolution* and the *Thief* remake seemingly forgot the defining qualities of their predecessors). But now, with *Splinter Cell* set to return after a decade's hiatus, it has a chance to return to – and build on – the design ethos that made *Chaos Theory* so special.

With so much to evolve in such a short span of time, the development process took its toll on Hocking, whose obsession to deliver his vision often saw him working 80-hour weeks of his own accord. "I'd only been making games for three years. I didn't realise how much trouble I'd put myself in," he remembers. "I sometimes question whether it was really worth it. In the end I feel like it was. I'm very proud of it and it's something I'll be proud of for the rest of my life."

There's a contemplative moment of silence before Hocking adds a caveat so common among relentlessly driven creatives. "But it wasn't free," he concludes. "It wasn't free." ■

### FISHER'S TIPS IN PERSUASION

*Sam Fisher's dialogue when he captures an enemy is some of the sharpest in the series*



#### THE LOGICAL PUTDOWN

**Sam:** Give me some intelligence or you'll be pushing up daisies in a cemetery full of guys just like you.  
**Guard:** I don't have any intelligence.  
**Sam:** Hey, you just called yourself stupid.

#### THE REMINDER WHO'S IN CHARGE

**Sam:** What are you doing here?  
**Guard:** I would ask you the same.  
**Sam:** I have a knife. You go first.

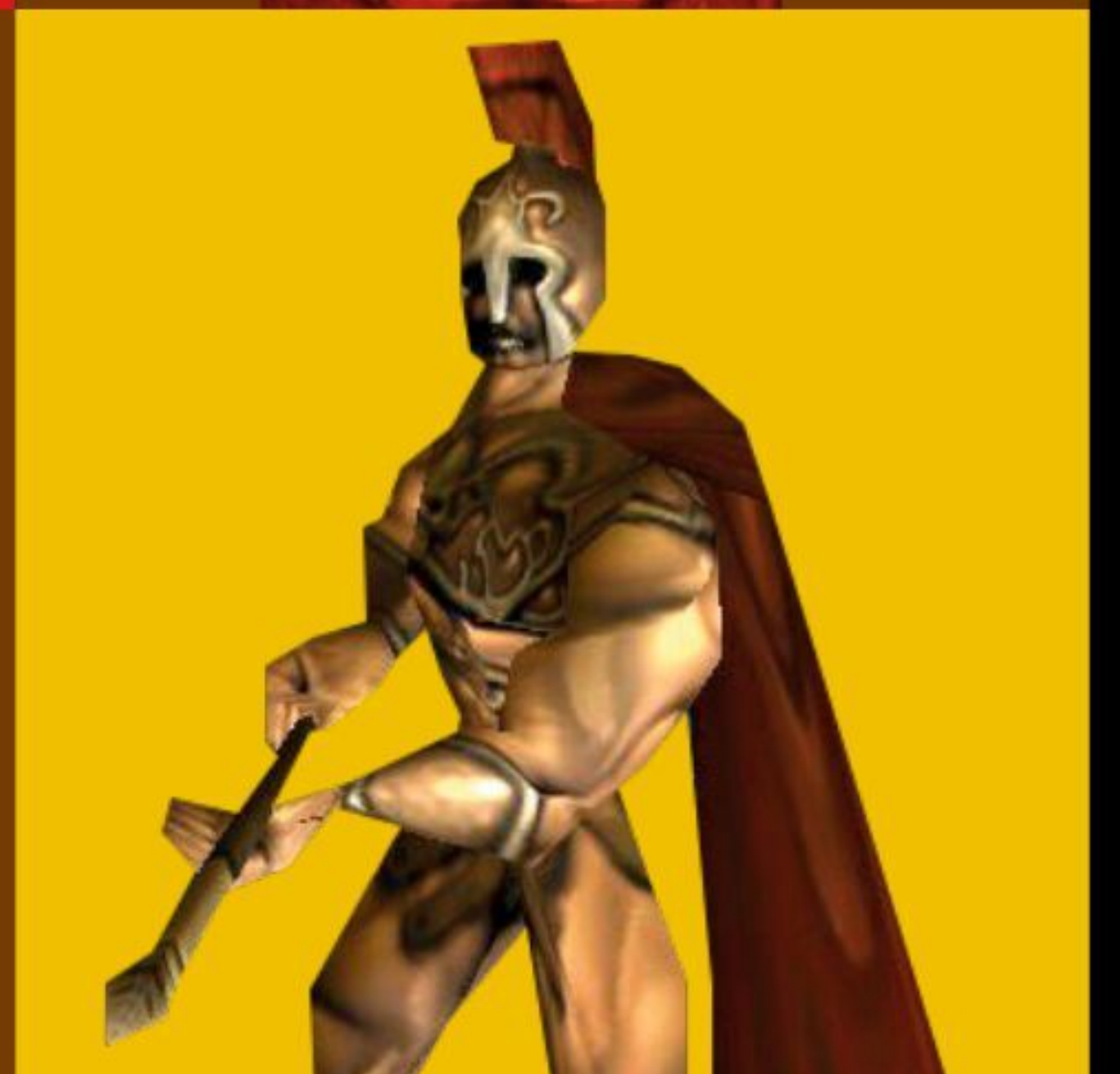
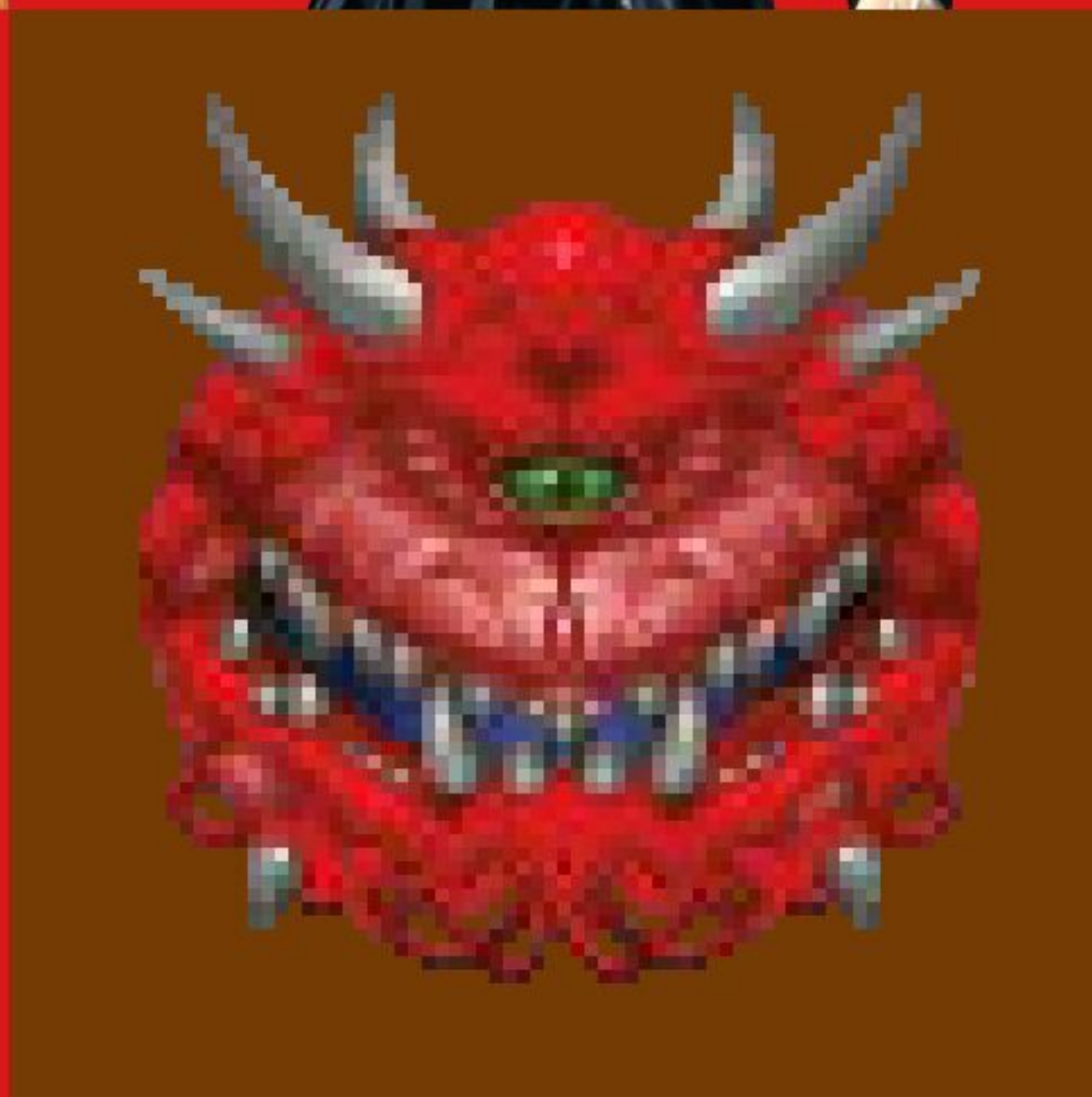
#### THE FAKE ORDERS FROM 'HIGHER UP'

**Sam to HQ:** "He's not talking, should I kill him?"  
**HQ to Sam:** "Negative, Negative"  
**Sam to Guard:** "OK, they say I should kill you so..."

#### 'THIS IS JUST A DRILL SO PLAY ALONG' ROUTINE

**Guard:** Wait a minute, is this a training exercise?  
**Sam:** Ugh, damn. Support! This guy knows it's an exercise, who let the cat out of the bag?









# THE DUNGEON MASTERS

How **D&D** shaped every  
corner of PC gaming.

*By Jeremy Peel*



**I**t explains a lot about Warren Spector, the driving force behind *Deus Ex*, that his first dungeon master was the author Bruce Sterling. Not only was Sterling destined to become one of the fathers of cyberpunk – the science fiction genre that spliced future tech with social commentary, just as *Deus Ex* would – but he was a generous and accommodating DM.

“What was most powerful about that first night, and all the nights that followed for the next ten or so years, wasn’t the story Bruce was telling to us,” Spector says. “It was the story my friends and I were telling with him.”

Spector’s head still swims with memories of the Rat Gang, the street crew he ran with as Botara Chitan, a samurai who never smiled. He remembers the way the gang fought and grasped and became a real power in the river city of Shang, and how the campaign ended with... well, he won’t tell us how it all ended. “I’ll get too emotional,” he says, “and embarrass myself.”

Like all good dungeon masters, Sterling understood that his role was to create the scaffolding of a story, an obstacle course that left enough room for players to pick a route through, whether that meant clambering over the top or crawling beneath. As Spector and his friends overcame the challenges Sterling set for them, they made choices that felt significant.

Decisions that belonged to them.

“If that doesn’t sound like the kind of videogame I’ve basically been screaming about for the last few decades, I guess I’ll just have to scream louder,” Spector says.

“All I’ve ever wanted to do was give people a taste of what I felt playing D&D.”

### ORIGIN STORY

After a brief spell at D&D’s publisher in the ’80s, Spector set about applying his love of shared authorship to PC games, working under Richard Garriott at Origin Systems.

“I think D&D influenced everyone in the computer game business back in the ’80s and ’90s and that was certainly true at Origin,” he says. “The *Ultima* games were about more than killing monsters and grabbing treasure.

They were about embodying an avatar that was, basically, you, the player, deciding how to interact with the world based on your own desires and ideas as a person in the real world. You weren’t trying to guess what your character would do or what the designer wanted you to do. It was you making the calls. It was all pretty primitive back then, but it was heading in the right direction.”

**I THINK D&D INFLUENCED EVERYONE  
IN THE COMPUTER GAME BUSINESS  
BACK IN THE '80S AND '90S**

As a producer on the early games of Looking Glass, the developer behind *System Shock* and *Thief*, Spector had a hand in defining the immersive sim genre. Though these games looked more like first-person shooters than any tabletop adventure, they did exactly as a DM would – present the player with an obstacle, then try to accommodate their most imaginative solutions.

“The idea is to allow players to do anything they want and not disappoint them,” Spector says. “Ideally, the game should never figuratively say, ‘I don’t know anything about that.’ Something logical should happen no matter what players do.”

Spector began banning his teams from using the word ‘puzzle’, which implied a single solution, and







**ABOVE:** These walls are filled with shafts, built not for ventilation but player choice.

**RIGHT:** Warren Spector produced the second part of the hugely influential *Ultima VII*.



encouraged them to think up ‘problems’ instead. He told them to “get off the stage, so players can get on it”. It’s an approach that led directly to *Deus Ex*.

“*Deus Ex* was about solving problems the way you wanted,” he says. “It was about trying things, experimenting, expressing your creativity, and then dealing with the consequences of your choices.”

“The story, as much as people seem to like it, is really there just to provide context, significance and structure to the player’s minute-to-minute choices. That’s totally D&D in a nutshell.”

### PLAYING IT WRONG

Once *Deus Ex* was built, Spector was delighted to discover that it recreated a great, subversive joy of the tabletop: stumping the DM. “There were plenty of times I watched *Deus Ex* players encountering a problem and trying something I’d never seen anyone try before, and found myself wondering, ‘Is that going to work?’” he says. “And then, whether it worked or not, having the game respond in a logical way? Man, that was powerful. And all D&D.”

In the years since, the designers who worked under Spector have disseminated across the games industry. One, Emil Pagliarulo, led design on *Fallout 3* and *4*. Another, Kent Hudson, became game director of *Watch Dogs: Legion*. Many are now at Arkane, working on *Deathloop* and *Redfall*. All have embraced some variation of the dungeon master role, forefronting creative problem solving in their games, which in turn have taken over PC gaming.

Still, Spector thinks some developers get the wrong end of the stick. “A lot of RPG developers think roleplaying is about character classes and skills and abilities and stats and secret die rolls,” he says. “That’s true of D&D, but only because those were the only simulation tools Gary Gygax and Dave Arneson had.”

## TOP OF THE TABLE

PC gaming’s favourite pen and paper worlds



### PATHFINDER

While rooted in D&D’s third edition rules, Pathfinder’s fantasy world had identity enough to spawn a popular RPG, *Kingmaker* – which has in turn spawned a brand-new sequel.



### CYBERPUNK

Mike Pondsmith’s legendary sci-fi setting went decades without any representation on PC. But CD Projekt Red made up for it by pouring all its *Witcher III* cash into a lavish, if flawed, blockbuster.



### WORLD OF DARKNESS

Is vampirism a curse? A cancelled World of Darkness MMO from the makers of *Eve Online*, not to mention the development hell of *Vampire: The Masquerade – Bloodlines 2*, would suggest so.



## The Dungeon Masters



» Videogames can and should be about roleplaying, not roll-playing.”

### ROLL OUT

Of course, there’s no reason games can’t do both. Bioware, which worked on three officially licensed D&D games, was understandably preoccupied with reproducing the tabletop ruleset – down to the 1d4+1 damage caused by a magic missile. Yet its origin point wasn’t so different to Spector’s, and yielded just as much inspiration.

Half the key characters in the *Baldur’s Gate* games – including their villains, as well as fan favourite companions like the psychopathic red wizard, Edwin – were initially player characters in a D&D campaign run by designer James

barbarian we know and love today. Ohlen was ultimately hired by Bioware almost by default, despite having no development background – he was the DM, and the party needed him. By the time he left the company 22 years later, he was its senior creative director.

After *Neverwinter Nights*, Bioware moved on from D&D – but the influence of its min-maxing ruleset could still be felt in *Knights of the Old Republic*, *Dragon Age*, and the RPG industry that grew around the studio.

## HALF THE KEY CHARACTERS IN THE BALDUR’S GATE GAMES WERE INITIALLY PLAYER CHARACTERS IN A D&D CAMPAIGN

**TOP:** *Neverwinter Nights* is the Hollyoaks: After Hours of D&D game titles, if we’re honest.

Ohlen. “While he was in high school he owned a comic book store,” recalls Bioware cofounder Trent Oster, “and he would run play sessions upstairs.” Programmer Cameron Tofer played Minsc, but fumbled his Intelligence roll – and so birthed the breezily braindead







What's more, those rules came with a worldview.

"It's almost a philosophical thing," Oster says. "The concept of the group being mighty because of the combination of different abilities, backgrounds, and viewpoints. D&D preaches the bible of diversification, and it always has. You realise that the group is greater than the one."

It's an idea that resonated with the public, particularly when *Mass Effect* leaned into the emotional – even romantic – connection with the party. Today, the concept of the RPG companion is a widely understood part of pop culture, rooted in Bioware's appreciation for D&D.

You could say the same for the famous moral choices that pepper the studio's games. First popularised by *Knights of the Old Republic*, on which Ohlen was lead designer, they can be clearly traced back to D&D's alignment chart – which judges every character as good, neutral or evil.

"The concept of good and evil was a big thing at Bioware," Oster says. "Most games at that point were really focused on you doing the right and just thing, whereas almost everything we did allowed you to try being bad. That duality came out of pen and paper. When you're playing D&D, sometimes your party are jerks, and your DM lets you roll and see where it goes. A lot of that player freedom came from those D&D roots."

### IMPENDING DOOM

id Software's dungeon master, John Carmack, allowed his party to be jerks. But he pulled out the ultimate consequence in response – the end of the world.

"Yeah, that was my fault," says *Doom* designer John Romero. "I was greedy and underestimated the power of demons." When the party came across a pentagram in its adventures, the summoned demon trapped inside

## DUNGEONS & JARGON

### A handy glossary of weird tabletop terminology

#### "GROGNARD"

A player who prefers the company of the older editions, thank you very much. Doesn't need your newfangled 'short rest' mechanics.

#### "SKILL MONKEY"

A party member who primarily shines off the battlefield – perhaps as a linguist, thief, or survivalist.

#### "TRIPPER"

A character who specialises in knocking enemies flat on their backs.

#### "TPK"

Total Party Kill. If you're subject to one of these, your DM may be John Carmack.

tempted Romero with powerful items in return for its freedom: a +5 sword, a ring of regeneration, and a ring of invisibility. "I wanted that stuff badly," Romero says. Once freed, the demon made good on the deal, but offered a few ominous words, "It won't matter anyway. We're taking over this world."

"We all spent the next month battling demons, hiding, watching powerful heroes lose the fight, and eventually the world was wiped out. That was the last time we played D&D together."

It may have been a cruel conclusion to the party's journey, but Romero insists that Carmack was a "very fair DM" who was "true to his own rules". "He was always rolling secret dice because there were so many ways that things could go wrong or be revealed," he says. "A random chance encounter could

happen. There was never a dull moment."

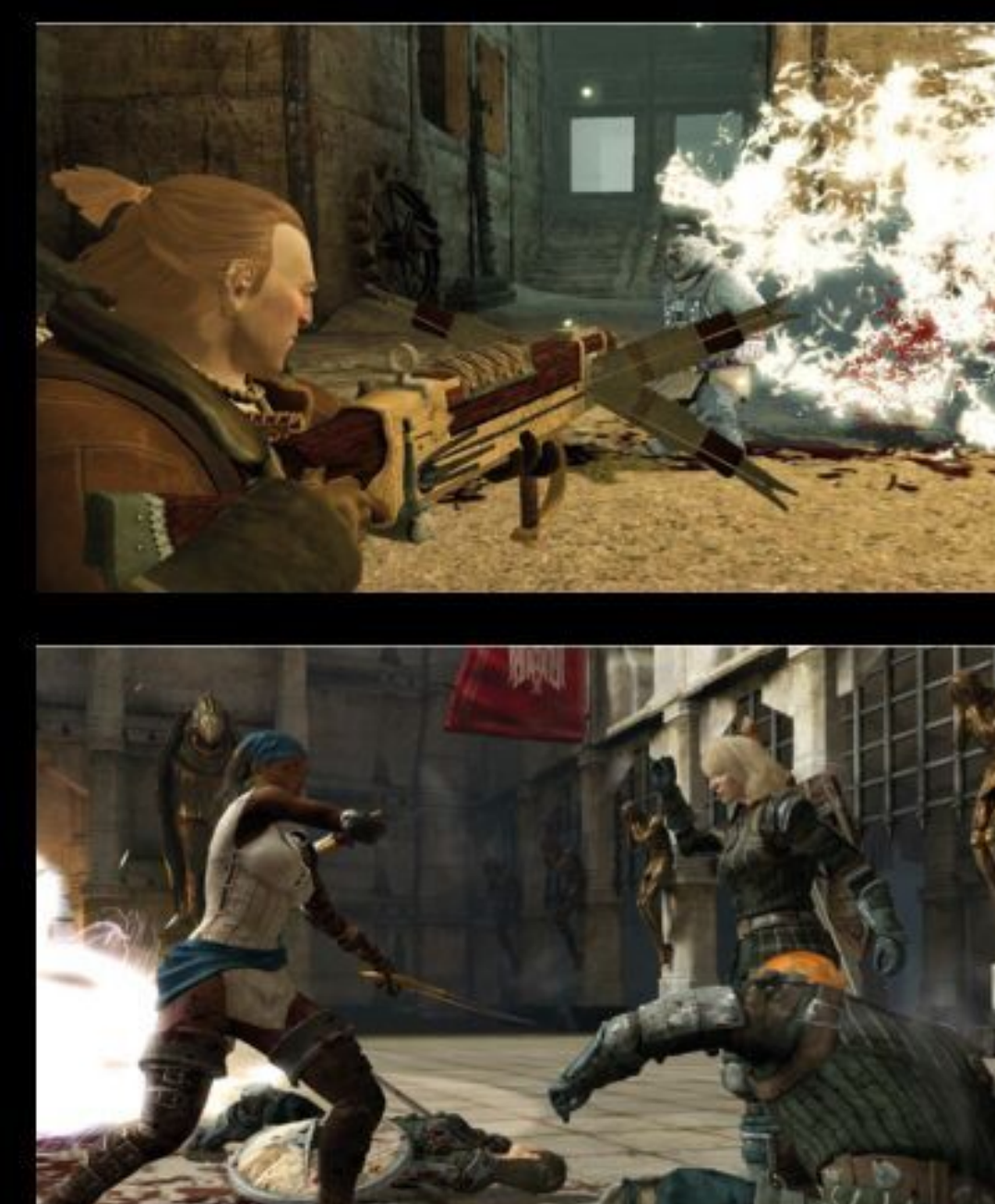
It was Carmack who lost most in the demonic fire – a huge, personalised world of at least 100 NPCs operating their own schemes. Yet his loss was our world's gain, since those D&D sessions inspired the premise for *Doom*, a game about a Martian base overrun by invaders from hell.

"We never thought that the D&D games we were playing would end up influencing our game designs," Romero says. "It just flowed easily and was enthralling. We all liked playing together. No one pored over stat sheets, and no battle or rewards were held up due to some arcane rule lawyering. D&D was yet another way that we gelled as a team."

### SHAKE UP

One of Carmack's NPCs was called 'Quake'. He belonged to a group called the Silver Shadow Band, which worked for an organisation named Justice.

**RIGHT:** Give this Zombieman an axe and you've got id Software's tabletop campaign.



**ABOVE:** Bioware games are defined more than anything by their companion characters – an idea directly inspired by D&D parties.





» After a few adventures in *Quake*'s company, the id Software team thought he was cool enough to be the protagonist of a videogame.

"We started working on it in January 1991," Romero says, "but the tech wasn't good enough and we cancelled it." After *Doom*, Romero returned to the idea – dreaming up an action game that would have armed players with a huge hammer that cracked the earth, and seen them accompanied by a sentient artefact called the Hellgate Cube. You can see remnants of that design in the finished FPS that shares *Quake*'s name – especially the medieval aesthetic and D&D-esque locations, like the Ogre Citadel and Wizard's Manse. Its oppressive, dark fantasy atmosphere is embedded deep in the memories of a generation of PC gamers, and is an important influence on modern indie shooters.

Even after leaving id Software, those D&D sessions lived large in Romero's memory. He named his breakaway project, *Daikatana*, after the very +5 sword that got his party into so much trouble. Perhaps that was tempting fate: *Daikatana* would prove to be a notoriously troubled project.

Today, you can find D&D in the bones of Romero Games' strategy game, *Empire of Sin*. "D&D will forever be a part of any video game that requires calculations to resolve conflict, to get loot drops, to define character traits," Romero says. "D&D is all about progression and making sure the calculations work as characters progress. Those core elements ensure that players remain interested because they are evolving with the game."

## NEW EXPERIENCE

It's these latter concepts – of XP and levelling up – that might be D&D's most pervasive contribution to PC gaming. They provide essential punctuation to *Diablo* and *Destiny*, keep *COD* players killing, and grant *The Witcher III* its slowburn structure. Strip away those



**TOP:** John Romero did make a game with a hammer in it, but sadly, it was *Daikatana*.

**LEFT:** A fantasy influence on *Quake*? Surely not.

## GRATEFUL TO GYGAX

The PC games that pay their respects



### TINY TINA'S ASSAULT ON DRAGON KEEP

In this *Borderlands 2* DLC, Tina serves as 'Bunker Master' in 'Bunkers & Badasses'. The idea has since spun off into a whole new game called *Wonderlands*.



### (ASMR) VIN DIESEL DMING A GAME OF D&D JUST FOR YOU

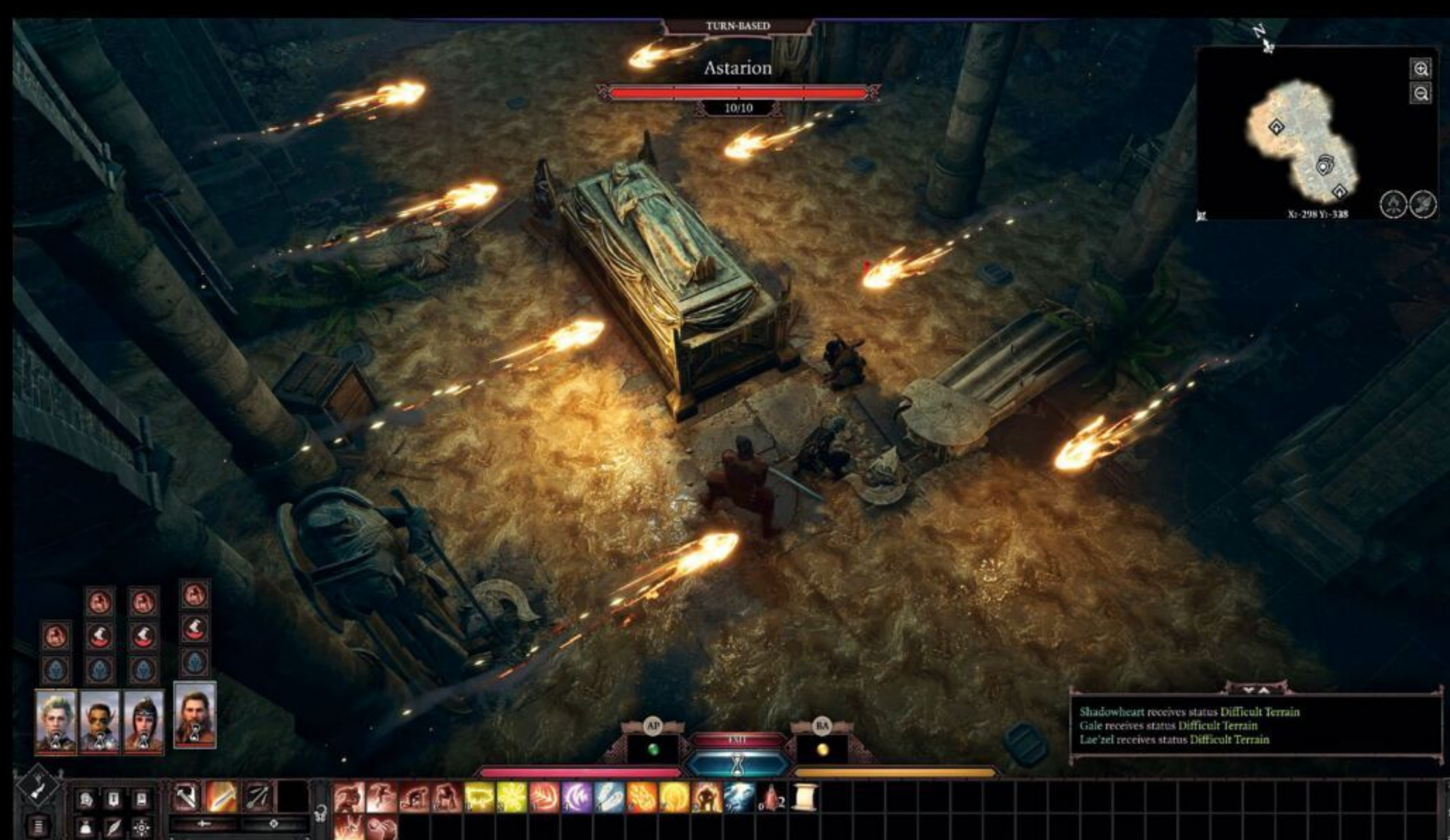
A very real game, playable on *itch.io*, which simulates a tabletop sesh with Hollywood's baritone beefcake. Soothing.



### LIFE IS STRANGE: BEFORE THE STORM

A whole scene of *Deck Nine*'s teen drama prequel is dedicated to roleplaying as an elf barbarian before class.





fundamental ideas, and it's hard to imagine what PC gaming would even look like.

"It's funny," Spector says. "I'm actually a proponent of not focusing on XP and levelling, but it seems like most of my games include them no matter how I feel about it. I'll never quite understand that. I guess it's impossible, at least for me, to leave D&D behind completely." Spector recognises, grudgingly, why the stats and skills he speaks so disdainfully of have spread so far – even if he doesn't recognise them as the spirit of D&D. "Players 'get' that approach to roleplaying," he says. "It makes it easier to inhabit an avatar you created systemically, rather than one you create on the fly through your in-game

behaviour. Familiarity breeds comfort and comfort leads to a kind of enjoyment."

The immersive sims that capture the sense of freedom Spector first felt at Bruce Sterling's table are, he admits, intimidating. "They force you to think and, in a weird way, take responsibility for your actions," he says. "Because they're your actions, not your character's. You have to stop, assess, plan and only then act. If we're being honest, all that stuff is work – fun work, but work. Tabletop RPG tropes are simple, well understood and put the focus on the character and the designer's story. That's comfortable for players." It's not the end of the story, however. In 2021, PC developers are working to tie roleplaying and roll-playing together. Just look at *Baldur's Gate III*. Larian's upcoming RPG is an officially licensed D&D product, which mimics the ruleset of

## D&D IS ALL ABOUT PROGRESSION AND MAKING SURE THE CALCULATIONS WORK

the boxed game and copies its creatures straight from the Monster Manual. Yet more than that, it's an immersive sim by Spector's definition: a world full of obstacles you can overcome through simulated stealth or intense combat, by manipulating objects in the environment, or by talking your way out of trouble. A sturdy platform of story scaffolding on which to drape your adventures.

D&D has delved into and conquered every last nook of PC gaming. And now, finally, the party seems to be coming back together. ■

Image credit: Jason Scott, CC BY 2.0



# DOWNLOAD THE RABBIT HOLE

The last remaining **MATRIX ONLINE** fans can't wait for the renaissance

*By Luke Winkie*



**T**he faint remnants of *The Matrix Online* still radiate somewhere in the ether. I'm not saying it's possible to jack in, but... well, do some Googling and you may or may not find a website dedicated to emulating this beloved, doomed MMO long after its funeral. You may or may not uncover a hyperlink that downloads a preserved version of the game client and a crack designed to jailbreak it from Sony's rigor mortis grasp. You may or may not be asked to fabricate login credentials, and you may or may not watch your computer seize up as it attempts to render assets that have been left to atrophy since 2009. But if you follow the white rabbit far enough – if you take the red pill and slink past the mouldering firewalls like the brave pirates of the Nebuchadnezzar once did – you will eventually find those abandoned greyscale buildings, that queasy smog-stained sky, and a deep, permeating sense of loss. *The Matrix Online* shambles on, creaky but undeterred.

It will not take long for you to understand that *The Matrix Online* has grown shrivelled and desiccated in its afterlife. The game was released in 2005, and Sega pulled the plug just four years later. *The Matrix Online's* emulation project – the only way to play the game in 2022 – was pieced together by a hacker named Rajko through reams of server code he scraped together as the game entered its hospice period. Rajko has toiled for 12 years as the MMO's personal curator, and as I write the emulation resembles more of a zombie than a messiah. A huge swathe of content is missing, and will likely never be recovered. The project is not capable of providing combat, quests, character progression, or many of the gameplay elements that a nation of redpills once enjoyed.

And yet, against all odds, *The Matrix Online* keeps on finding new ways to stubbornly survive. For those who grew up adoring this game and the greater Matrix mythos, that's more than enough.

### A CLASSIC IN STASIS

"You [use the emulation] to chat, explore, equip clothing and weapons, and emote," says Bitbomb, one of the many denizens of a Discord server »



## The Matrix Online

» dedicated to the ongoing resuscitation of the Matrix MMO. “Most recently, your character can finally sit on things. That didn’t work for the longest time.”

*The Matrix Online* deserved better. Hell, *The Matrix* itself deserved better. All the pieces were in place. The Wachowski sisters pioneered a dense fiction perfectly tuned for an ascendent generation of technophiles: a filthy dystopia embellished with snakeskin trench coats and mirrored sunglasses. They used Hollywood to realise a generation’s worth of latent cyberpunk wish-fulfilment. The franchise was downright monolithic for a few years, the first film scooping up nearly \$500 million at the box office and earning a quartet of Oscars at the Academy Awards. Neo, Trinity and Morpheus were consecrated into a new pantheon of superheroes long before the Marvel revolution.

If you asked me what I thought the future held in 1999, I’d tell you

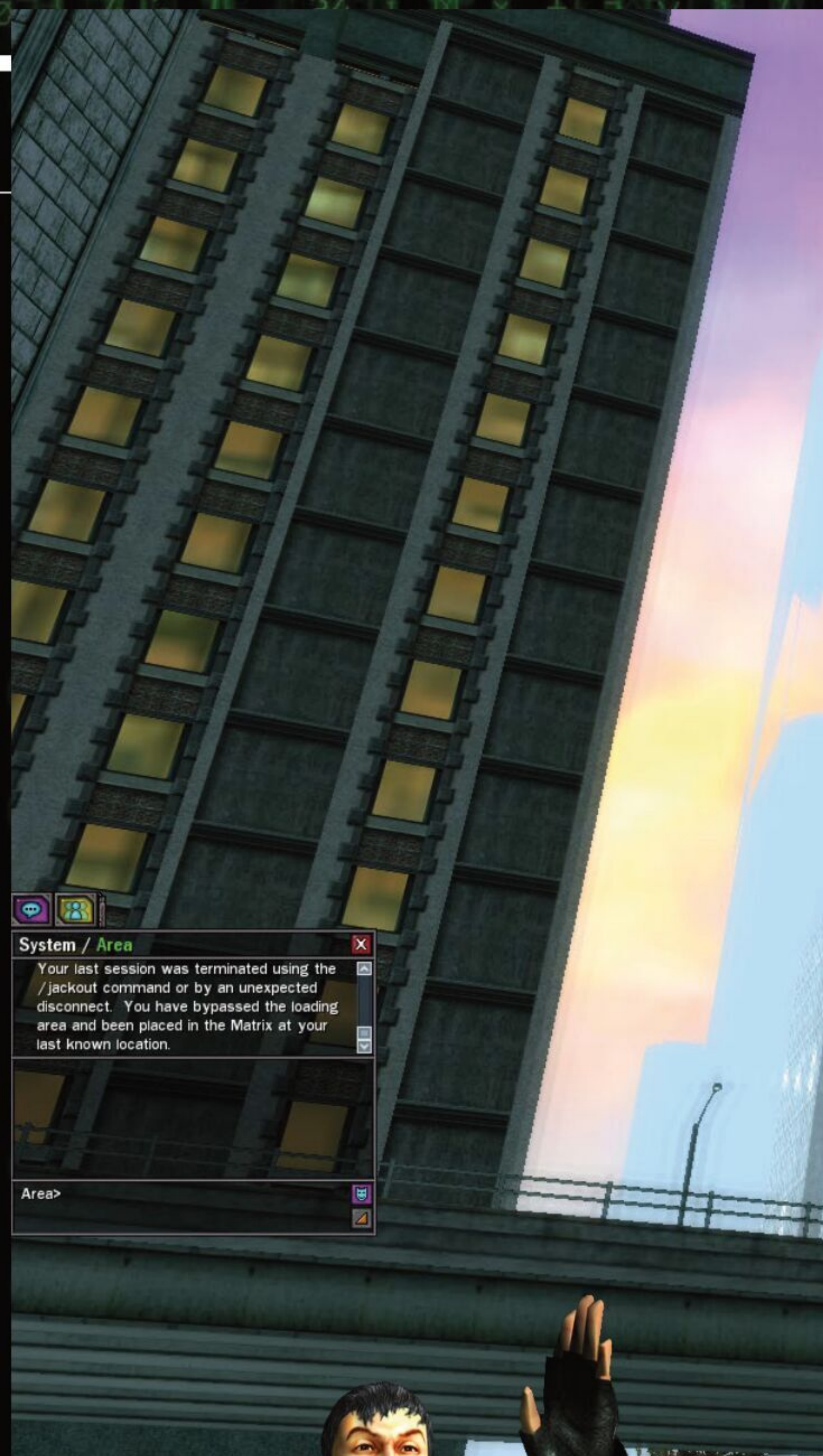
that it seemed inevitable that *The Matrix* would continue to cultivate its multiversal empire with a litany of sequels, TV shows, comic books and videogames, securing its place as an omnivorous media juggernaut. *The Matrix Online* was supposed to be the capstone of that promise; a persistent metaverse in which the saga could grow, twist and iterate forever. The Wachowskis named the MMO as the

canonical successor to the trilogy, so for a crop of newly-minted fans captivated by transhuman potential, a subscription was a no brainer.

## A PERSISTENT METAVERSE IN WHICH THE SAGA COULD GROW

### AFTERLIFE

But you probably know the story from here. *The Matrix*’s two muddled sequels lacked the watershed, mind-bending clarity that elevated the original, and by 2005, the franchise’s zeitgeist had thoroughly passed through the nervous system of American society, leaving only a chattering niche of diehards behind.



ABOVE: Some of the game's skylines are still evocative all these years later.

FAR LEFT: Getting redpilled.







*The Matrix Online* earned middling reviews and a small, negligible playerbase upon release, and when it was mercifully snuffed out of existence, nobody really seemed to notice. But the passage of time has been kind to the pop relics of the early 2000s and, right now, we are once again living through a hot flash of Matrix mania. The fourth film in the series – *The Matrix Resurrections* – is hgoing down a storm thanks to its Covid-mandated home streaming release, and rumours of a fifth entry are already being strenuously denied.

Those who adored this misadventurous MMO did not need a renaissance to reignite their love, but when I hit the dirty avenues of the emulation myself, I caught a few other newbies hiding out in the chat box, probing the ancient DNA of our once-and-future blockbuster. They, like me, caught the fever again. The Matrix has us, same as it ever was.

Nobody, not even the most ardent *Matrix Online* defenders, wants to argue that the game was unfairly treated by critics. “The flaws were

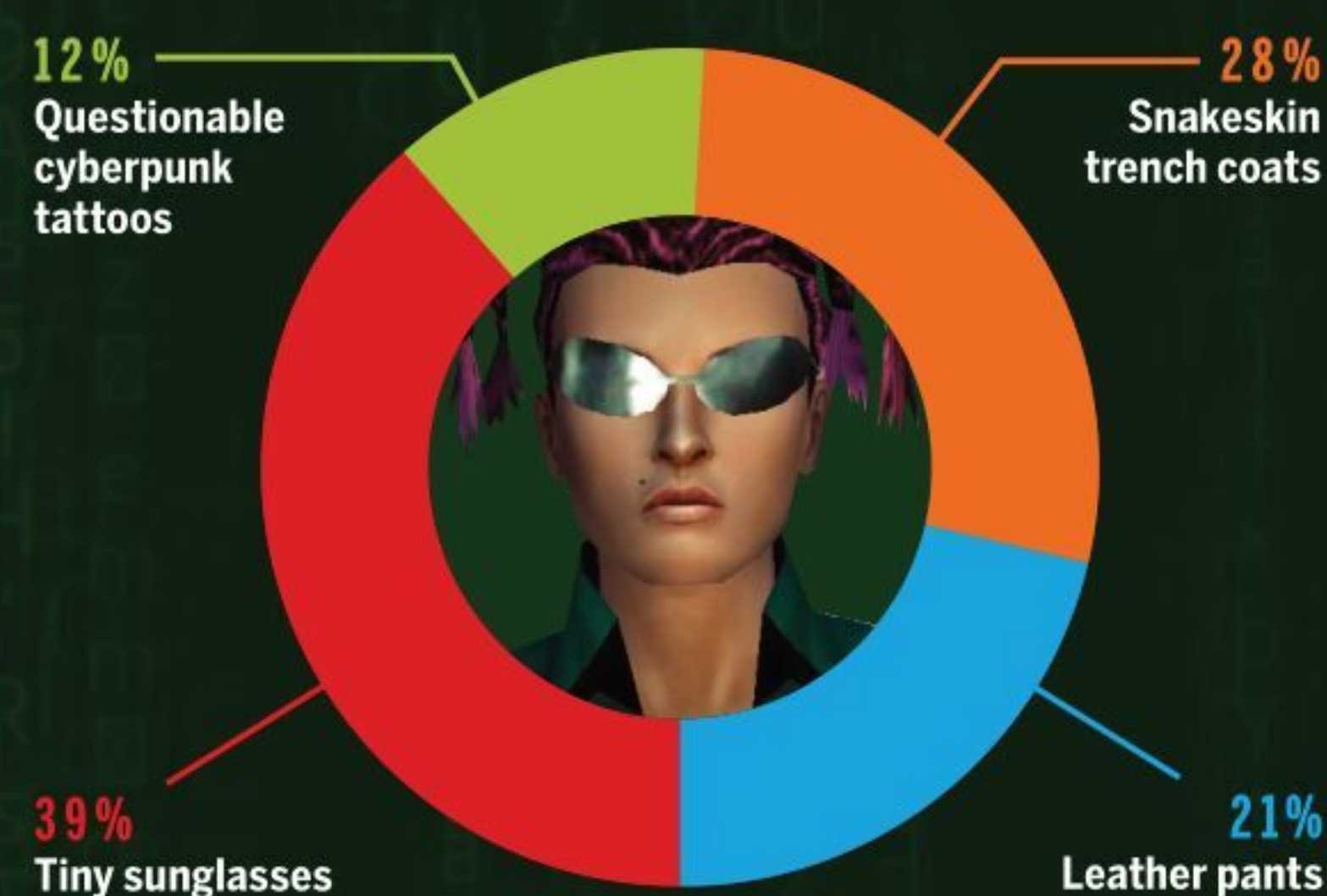
numerous,” says Vesuvius, another Discord member who was perhaps the most effusive about the MMO’s legacy during my interviews. “The combat [was unbalanced,] there were bugs, exploits, and a PvP system with no reward other than bragging rights.” All of those problems

eventually proved untenable. The MMO held under 500 active players by the time it was shuttered, which is about as grim as a server population can get.

But Vesuvius believes that there are certain elements of *The Matrix Online* experience that haven’t been replicated before or since by any of the major players in the game industry. In particular, he points to the game’s Live Events Team, which was composed of genuine Sony developers who would take control of important lore characters – think Morpheus or Seraph – and act out a crucial junction of the narrative in real time. The idea of a studio reaching through the looking glass and manipulating the contours of the Matrix without any scripting or artifice is so perfect I can’t believe it didn’t make a bigger splash. When I was hearing the same canned dialogue in *WoW*’s *Stormwind* over and over again, *The Matrix Online* was experimenting with spontaneous public theatre – a cavalcade of players chasing Niobe

## CYBER DNA

*Feeling lucky, punk?*







» through the corridors, desperate to eavesdrop on any juicy intel. That is a bold bit of game design; maybe we really were missing out. “The [live events] were unannounced, spontaneous, secretive,” says Vesuvius. “Even if an event took place on your server for your organisation, there was no guarantee you could participate. Screenshots of events were posted to forums the following day. They were often the best way to stay up to date.”

### THE RED PILL

Other players I spoke to extolled the flexibility of *The Matrix Online*’s talent tree – another element of the game that is sadly impossible to resuscitate in the emulation. “We could swap out our abilities whenever we wanted. In other MMOs when you chose your role you had to stick to it, but I loved the freedom to change my loadout when it suited me,” says Dan, who tells me he started playing the game when he was 14 years old. Given how the rest of the RPG landscape has slowly

sanded down the hegemony of the Almighty Spec, perhaps Dan is right when he says that *The Matrix Online* was ahead of its time.

By and large though, these wayward fans are most fond of the way this MMO told its story. *The Matrix Online* was religious about its plot; dispensing frequent cinematics and universe-altering ‘critical missions’ that slowly unfurled what life was like after Neo. In 2005, as it became clear that there

was no more Matrix fiction on the horizon, this videogame was the only way to get a taste of that endlessly cascading code.

The Matrix Extended Universe goes places, and these players savoured it to the last drop. “Niobe revealed her true feelings for Neo. Ghost resisted temptation and corruption at the hands of a sexy machine liaison designed to appeal to humans. As the Oracle hinted, he went on to lead the charge

## CLASS ACTS

*Our favourite character archetypes offered in the game*

Devoted Ascetic

– Aren’t we all?

Fanatic Self Improver

– Hustle culture, baby.

Suspicious Cynic

– Also known as, ‘games journalist’.

Detached Spectator

– The Keanu Reeves of character tropes.

Troubled Intellectual

– Sure, let’s call it that.



## The Matrix Online

absent of Neo and Morpheus," says Vesuvius. "The lore was always the heart of the game."

## RESURRECTION

Neo is a myth in *The Matrix Resurrections*, reinserted into the overly complex power-generating apparatus as a game developer making something not a million miles away from *The Matrix Online*. And while I love the idea of the band getting back together – Keanu Reeves, Carrie-Anne Moss, Jada Pinkett Smith – for an Endgame-style supergroup bonanza that still honours the scaffolding laid out by an old, dead MMO, it's the original 1999 movie that is most referenced. After the franchise's long, circuitous trip back to the pinnacle of pop culture, it would be almost fitting to have seen cutscene compilations from the game instead.

Vesuvius says that he desperately hoped the MMO would remain

canonically enshrined in the new movie, but others have made peace with the Wachowskis pressing the reset button. "A reboot could be supremely inventive. I feel like I would be experiencing it with the same folks I did way back when," says a *Matrix Online* lifer who goes by Sugaree. "The deepest feeling of satisfaction I got came from socialising. I'm not afraid of a reboot."

Regardless of what comes next, *The Matrix Online* will never flicker out for good. The game is enfeebled – a shell of itself – but it persists because the memories have

never grown stale. Take a walk in the uncanny metropolis of Mega City, close your eyes, and be whisked away to an era where these streets were packed with kung-fu fights, leather dusters, and smoked ammunition. A crack of light is pouring into this tomb as *The Matrix* stirs once more. At last, after more than a decade of undeath, there is finally hope on the horizon. ■

## "THE LORE WAS ALWAYS THE HEART OF THE GAME"



ABOVE: Jacking out.

BELOW: Strolling through Mega City.





# HOW TO BUILD

How videogames recreate gravity, from Newton and platform games to Einstein and the simulation of galaxies.

*By Edwin Evans-Thirlwell*



## BLACK HOLE

A B L A

G

ravity is one of the simplest and most complicated things in existence. It's both as straightforward as jumping, and a source of cosmic machinations and monsters that defy the imagination. The entity holding you to the ground right now is the same principle of attraction that leads to black holes – exhausted stars that have collapsed under their own mass, growing denser and denser until, at last, they form a vortex so absolute that time deforms and not even light can escape the pull. »



» Videogames have been wrestling with gravity since the

medium's birth, from the geometric landslides of *Tetris* to

the Jenga-esque launch vehicle physics of full-blown 3D

space sims. These games can be a useful means of

visualising equations and phenomena you'd otherwise need a PhD to understand, but most games compromise

with reality out of necessity or simply in the name of fun. They are their own little bespoke universes – and even

those that adhere sternly to the science struggle to portray the ideas put forward in Albert Einstein's theory of general relativity.

### UPWARDLY MOBILE

Before we get to Einstein, however, let's talk Mario. Working out how to make a character fall in a platformer is one of game development's bread-and-butter challenges. It sounds simple enough: you subtract a certain vertical distance from the character every frame unless there's something in the way. But getting a leaping character to 'feel' right can take months of work, because everyday gravity is generally more inconvenient than

enjoyable. To make it sing in a videogame, you have to figure out how and when to break the rules.

"If you apply gravity on top of a normal jump, you're going to get this parabola shape," explains Frying Jelly's Eric Stryczek, one of the minds behind the dreamy yet ferocious *99 Fails*. "It's perfect. [But] it actually feels really terrible as a jump. So what Mario did all the way back on the Nintendo Entertainment System was have this sort of extra behaviour – when

you're falling, velocity gets exponential. So you sort of go up, stay in the air for a while, and then you get sucked right back down really quickly."

The equation for how fast objects fall on Earth is minus 9.81 metres per second squared – many third-party game engines like Unity treat this as the rough default for their physics systems. But as Stryczek goes on, "It feels really floaty to have a value like that. Because in platformers, we tend to jump really high. What a lot of beginners get wrong is that they don't mess with this value – you really need to have that snappy feeling."

In *99 Fails*, things are complicated by the protagonist Zeebo's habit of changing shape. "Zeebo has this recurring

nightmare, where he's transforming in weird and

grotesque ways," says Frying Jelly's founder Pawel

Pachniewski. "And each time, there's a different

mechanic that the player uses – he'll be a cart, he'll have long legs, he'll be a grasshopper jumping onto broken

pillars, he'll have clones." As such, Frying Jelly sometimes switches off gravity entirely when it wants to add a specific movement trajectory.

### SQUARING THE CIRCLE

Expand the playable space to encompass an actual planet, and gravity becomes even more of a riddle. "The definition of down isn't down anymore," says Felipe Falanghe, creator of *Kerbal Space Program*. "You can't just move things towards the bottom of the screen or the horizon, you have to figure out where you are in relation to the planet and apply force towards the centre."

As to how much force you should apply, most developers and astrophysicists follow Isaac Newton's inverse square law of gravity, which dictates that an object's gravity is strong up close and drops off rapidly as you move away, then shallows out. Understanding this formula is key to playing *Kerbal Space Program*, in which you send little green men to visit other planets in a kooky yet unforgiving approximation of our solar system. "It's the thing that makes orbits work," Falanghe says. "If you don't add that orbits will look like... well, they won't look like circles." Indeed, most *Kerbal* spaceflights look like craters.

If *Kerbal* sticks to the textbooks on this count, it 'cheats' on other fronts. In particular, it sidesteps the so-called 'n-body' problem, whereby every planetary mass in a group exerts a gravitational pull on every other body simultaneously. "KSP does something that is not entirely realistic which is sometimes called patched conic approximation, which is just a fancy way of saying that we switch gravity sources whenever you get close enough to another one. When you cross into the 'sphere of influence' of the moon, the sources switch, and now you're only affected by gravity from the moon."

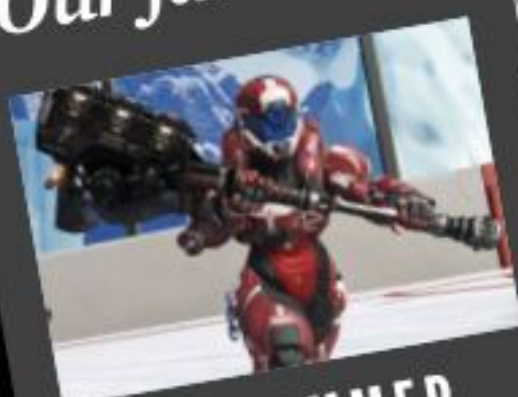
Treating gravity as a strictly two-way affair makes for a more stable and predictable simulation, which is vital given that missions in *Kerbal* can take several in-game years. It means that the simulation doesn't have to recalculate gravity 'step by step'; indeed, the game can switch mid-spaceflight to a "deterministic" means of calculating movement without causing discrepancies. "We used to call it the rails system because the spacecraft was on rails, and it basically meant that we could freeze all physics, and just carry things through space." The

**YOU HAVE  
TO FIGURE OUT  
HOW AND WHEN  
TO BREAK  
THE RULES**



## PLAYING WITH GRAVITY

Our favourite mad science tools that put the 'sick' in physics



### GRAV HAMMER HALO

Bungie's love letter to any player who's ever flipped a Warthog. An enormous Covenant bludgeoning hammer capable of walloping entire barricades into freefall.



### GRAVITY GUN HALF-LIFE 2

The weapon that launched a thousand seesaw puzzles. Also handy for shooting chairs and sawblades at things you'd rather not waste your regular ammo on.



### PROBE LAUNCHER OUTER WILDS

Fire it at the skyline and watch the probe curve according to the planet's mass. Then tap the shutter to produce a stop motion video.



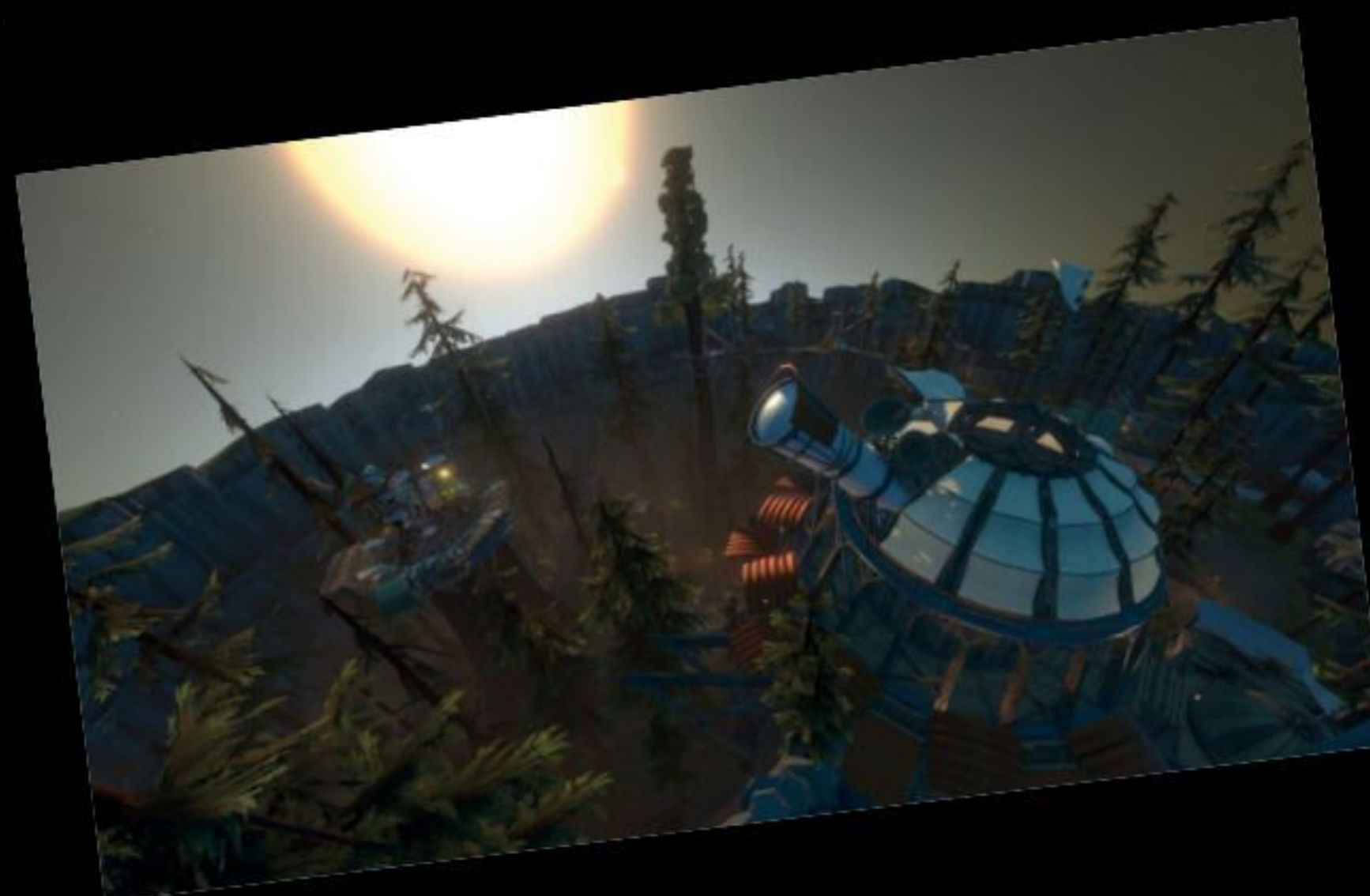
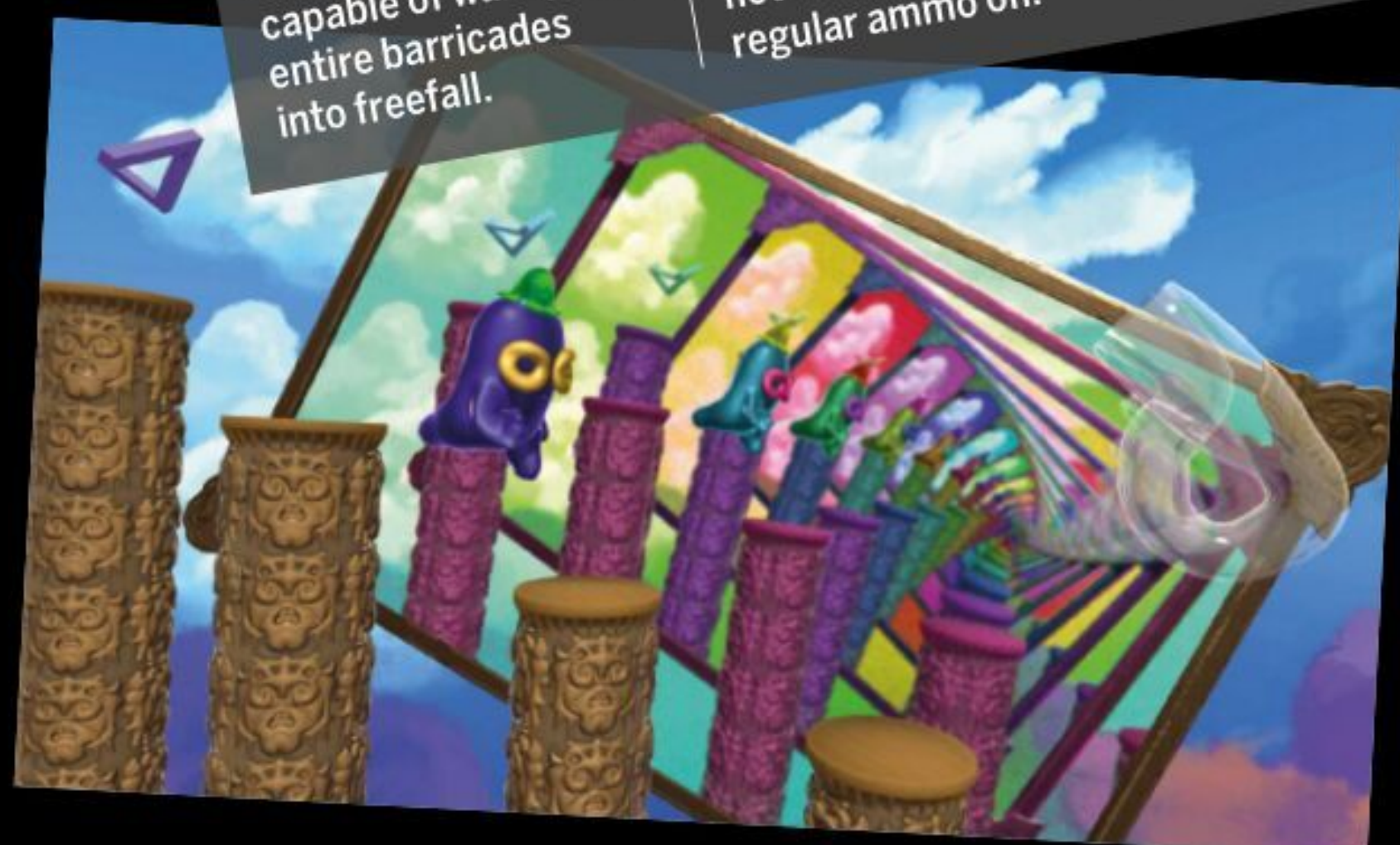
### SINGULARITY MASS EFFECT

Rudely pops open a mini black hole that scoops up nearby enemies and whirls them around like pillows at a sleepover till you put them out of their misery.



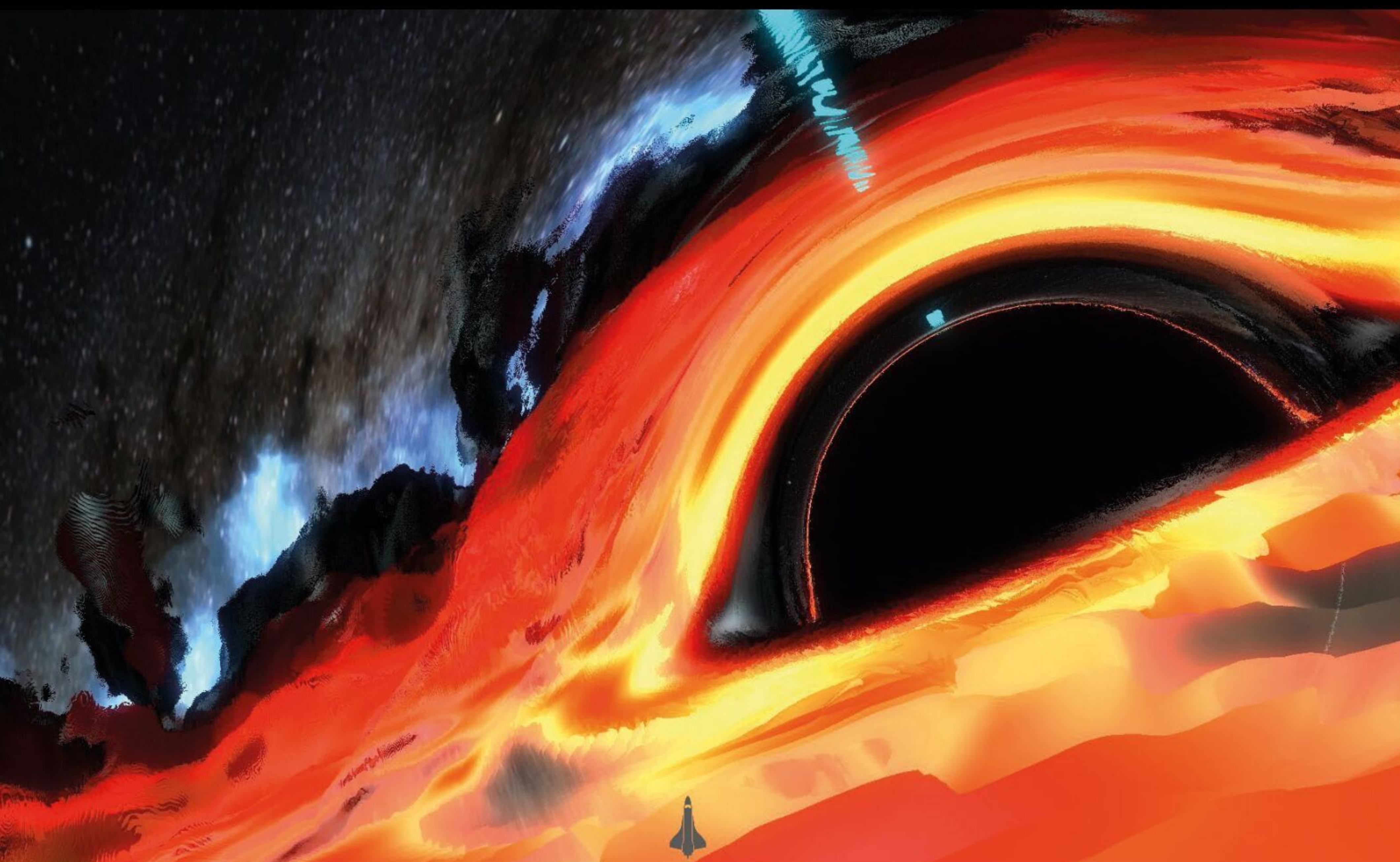
### KAT GRAVITY RUSH

In a nutshell, you get to decide which direction is down. This ability only covers a small area around you – best not to activate it in a crowd.



**FAR LEFT:** 99 Fails shows how even jumping can be a headache to design.

**BELOW:** Guojun Pan's Black Hole Simulator is a celebration of gravity's 'symmetry'.



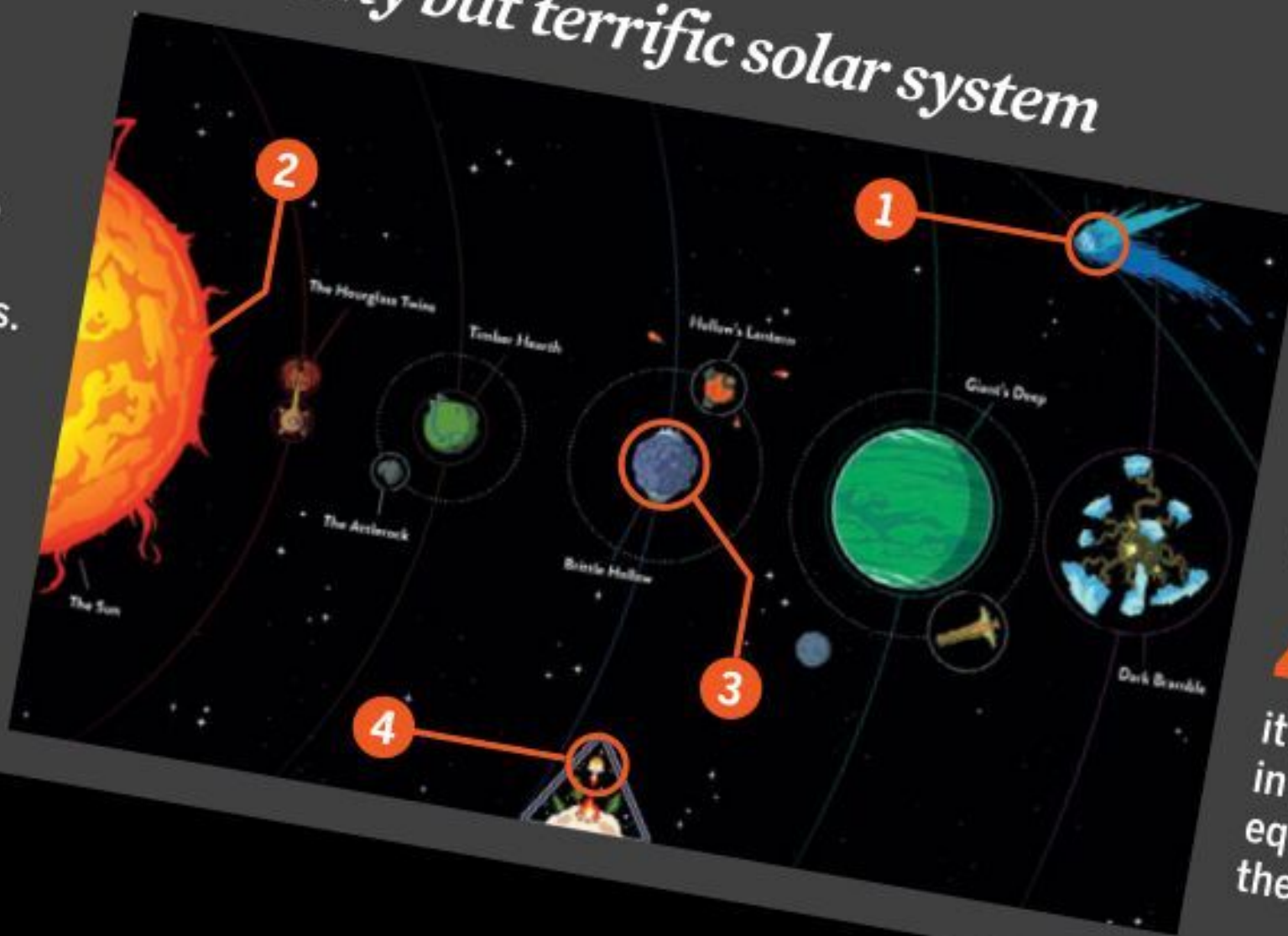


### OUTER SPACE

Exploring Outer Wilds' tiny but terrific solar system

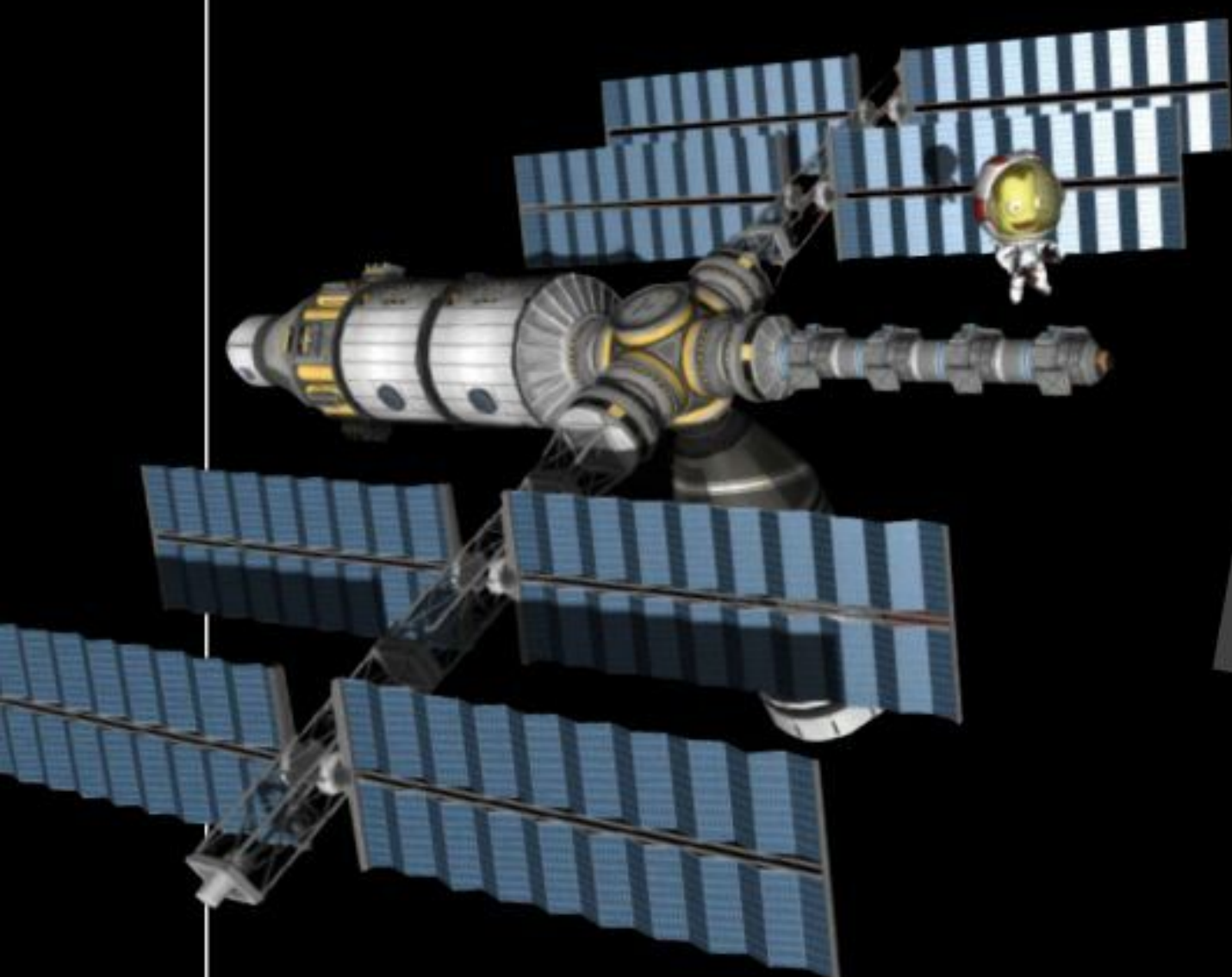
**1** Your ship may get pulled away by the gravity of Giant's Deep while parked on the Interloper comet, whose elliptical orbit creates varying terrain conditions.

**2** Newton's inverse square law applies on the Sun Station – the star pulls on the player's mass differently to the facility itself, making for one extra-perilous leap of faith.



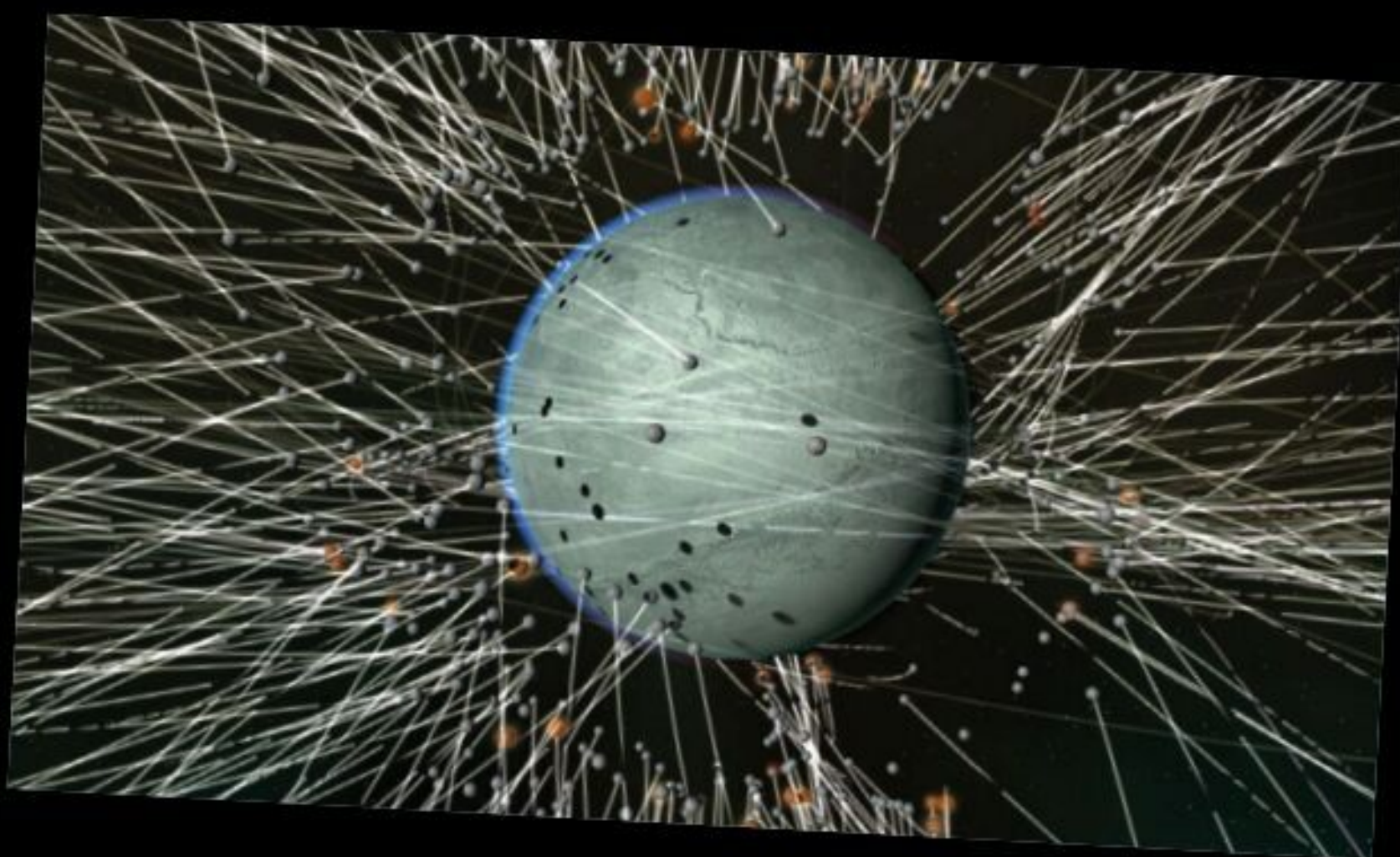
**3** Early in development, Brittle Hollow had a molten core rather than a subterranean black hole, with pieces fired into space by geysers rather than sucked in.

**4** Your ship's artificial gravity risks spinning it around when you stand in it, so Mobius applies equal force on the ship in the opposite direction.



**RIGHT:** *Universe Sandbox 2*'s whimsical 'choreographies' let you arrange planets in unlikely patterns.

**FAR RIGHT:** Gravity is Kerbal's "main character or at least, villain", says its creator.





» trade-off is that *Kerbal* can't simulate certain fancier

astrophysical 'terrain variables', such as Lagrangian points

– tactically advantageous locations in space between masses, where the pull from each mass is equal.

## SUM OF ALL SPHERES

Mobius Digital's planet-hopping timeloop adventure

*Outer Wilds* is similarly selective in its simulation. For one thing, Newton's inverse square law only applies to one

mass – the sun. The reason is simply that *Outer Wilds*' solar system is tiny, with planets the size of islands separated by tens of kilometres – as such, the pull of gravity drops away too quickly. "Early on, I tried the inverse square law on planets," says Alex Beachum, creative director. "But because they're so small, it just becomes too easy to achieve escape velocity – it doesn't feel right." Instead, gravity decreases in a more 'linear' fashion, and the developer can set alignment fields so that players orient towards masses automatically.

*Outer Wilds* also exercises a bit of licence with regard to interactions between planets, adds tech artist and programmer Logan Ver Hoef. "We have this sphere of influence for the sun and we've got spheres of influence for each planet. But because planets end up passing so close by each other, if they actually affected each other at that scale, they'd form these wild patterns and probably just escape orbit." The game's equivalent of our Moon, the Attlerock, responds only to the gravity of one planet, but with extra acceleration dolloped on top to reflect that planet's orbit – otherwise, says Beachum, the Attlerock might be left behind or dragged into the sun.

Elsewhere, however, the simulation is more stringent. Your spacecraft may tumble off the back of a comet when it nears the sun, for example, because in keeping with Newton's law, the star's gravity acts differently on the ship's mass versus the comet. Moments like these were often discovered during play, and left in for kicks. For all its resemblance to a cosmic stage production, with planets shape-shifting on schedule, *Outer Wilds* is on some level a 'pure simulation' with plenty of potential for chaos.

It's possible to wreak havoc simply by venturing too far. "If you disable autopilot and fly away from the solar system, and open your star map, everything's lost its mind," Beachum says. "Because floating point errors build up, and the planets are too far away. You can actually break the simulation if you try hard enough, because they're not on rails." The game's 22 minute timeloop was introduced partly as a kind of safety valve. "We wanted the solar system to change in ways that aren't easily

reversible, like Brittle Hollow falling apart, and having

everything reset is an easy way to handle that," Ver Hoef

says. "But also, the 20-ish minute mark was originally our limit for stability."

## PLAYING WITH STARS

Way out at the deep end of videogame simulations of gravity is Giant Army's *Universe Sandbox 2*. Created initially by Dan Dixon, who wrote his first gravity simulator in high school, it's been in development for ten years and has swollen to the point that the current iteration can recreate the motions of entire galaxies, each with its central supermassive black hole.

Unlike *Outer Wilds* and *Kerbal*, *Universe Sandbox 2* is a 'true' n-body physics simulation. It calculates the effects of hundreds of bodies on each other's movements, though it economises in places by, for instance, treating close-knit asteroids as a single mass. "It can become very, very slow," Dixon acknowledges. "But in many ways, gravity is the simplest thing we do now."

Giant Army has even looked at recreating dark matter, the mysterious and invisible substance that fills our universe, adding to its gravity and keeping apparently 'underweight' galaxies in shape. "Part of the problem with dark matter is that it doesn't really come in chunks," says Erika Nesvold, Giant Army's in-house astrophysicist. "There was a theory that it was big, compact objects, but it seems more likely now that it's sort of spread throughout a galaxy. And that's just really hard to handle in an n-body simulation. And it's also hard, of course, to show dark matter to a user. But we'd love to get back into it someday."

As a sim with no objectives besides meddling with the cosmos, *Universe Sandbox 2* doesn't have to worry as much about the design and playability pressures that shape gravity in *Kerbal* and *Outer Wilds*. But in adopting n-body physics, it has to wrangle with the question of mounting errors dependent on the speed at which the simulation progresses.

The bigger the 'step' between each set of n-body calculations, the less precise things become. "As a rule of thumb, picking a time step that's bigger than the time it takes something to orbit in a circle is a bad idea," Nesvold says. The game performs additional 'sub-step' calculations for finesse in the event of objects making sharp turns, but "there's only so many you can do". Increase the time

**OUTER WILDS  
IS ON  
SOME LEVEL  
A 'PURE  
SIMULATION'**



interval too much, and whole star systems may disappear.

“Some users thought, ‘Oh, in the future, everything’s gonna fly away from the sun,’” says Dixon. “No, no, no, what’s happened is you sped up time so much that it’s become inaccurate, which is [a problem] inherent to simulations.”

### DISTANT RELATIVES

While *Outer Wilds*, *Kerbal* and *Universe Sandbox 2* are fundamentally grounded in ‘classical’ Newtonian physics, their creators have all flirted with the more recent, and transformative theories of gravity introduced by Albert Einstein. To crudely summarise their differences, Newton’s physics holds that space is full of masses and forces act on them in linear time. According to Einstein, however, space and time are actually a single, fluctuating entity – a ‘spacetime’ which is woven together and distorted by mass, and this distortion is what we call gravity.

Einstein’s theory dictates that planets and stars don’t just reel in other masses, but ‘dilate’ time nearby relative to the passage of time for an observer further afield. This

obliges a fascinating, but not very intuitive rethinking of the act of falling. “The idea is that it’s not a force pulling you down, it’s the future leading you towards the ground,” Falanghe explains. “Spacetime bends, so that when your straight-line trajectory turns towards the ground it’s not just space that bends but time. The future bends your trajectory.”

As fascinated as he is by this prospect, Falanghe decided early on not to apply Einsteinian physics to *Kerbal Space Program*, partly because

the ramifications are negligible at solar system scale, and partly because time dilation is tricky to portray in a management game where solid scheduling is key. “In *Kerbal*, we have the orbit map that shows your trajectory, and you can plan manoeuvres and see how your trajectory would intersect with another celestial body, turn around and things like that. But if you said, ‘Oh, by the way, your ship clock will desynchronise with your home clock by like, 0.2 seconds, by the time you get here,’ that’s much harder to communicate to the player.”

Giant Army has thought more earnestly about introducing relativistic effects. As Nesvold and Dixon point out, these can be observed ‘close at hand’ in the

elusive behaviour of Mercury, which orbits close enough

to our sun to experience time dilation from its mass. The

problem is that simulating general relativity requires the player to actually be relative to things – to occupy a

vantage point *within* the universe, so as to, for example, witness the effects of gravity on light. This would somewhat interfere with the usual running of a god sim.

“If you deleted the sun, it would take a certain amount of time for it to disappear off your screen.”

### HEART OF DARKNESS

Both *Kerbal* and *Universe Sandbox 2* are checked from exploring Einstein because they’re born of genres that are steeped in concepts from Newton. Thanks to its sci-fi story, *Outer Wilds* is able to forge a little further. It hints at relativistic effects in the form of alien time travel experiments, connected to a miniature black hole that lurks beneath the crust of one unfortunate planet. During the game’s alpha, Mobius also added an island area that turned time dilation into a performance issue. “When you got close to this antenna, I just made the framerate worse,” Beachum reflects. “But it was really bad, and if anything, I think it should have been the reverse. It should have been that everything around you speeds up.”

The aforesaid black hole distorts light believably – it recreates the deflection of photons by gravitational lensing, though as Ver Hoef acknowledges, “It’s super fudged – [an actual photon] would follow a curved path and ours just go: boink!” But there’s no time dilation, and as with the sun and planets, the object’s gravity is carefully contained. “A black hole the size of Brittle Hollow should have a distortion radius larger than our real-world solar system.”

It’s easy to forget amid talk of refraction and dilation that what motivates all these projects is a sense of wonder – not just at the operations of gravity, but at the mingled elegance and eccentricity of the models describing it. “You have simple formulas and equations that give you this approximation of the universe,” enthuses Falanghe. Among Giant Army’s goals is teaching players to embrace the imperfections of sims at large – from videogames to the supercomputer-powered, yet no less flawed models used by NASA.

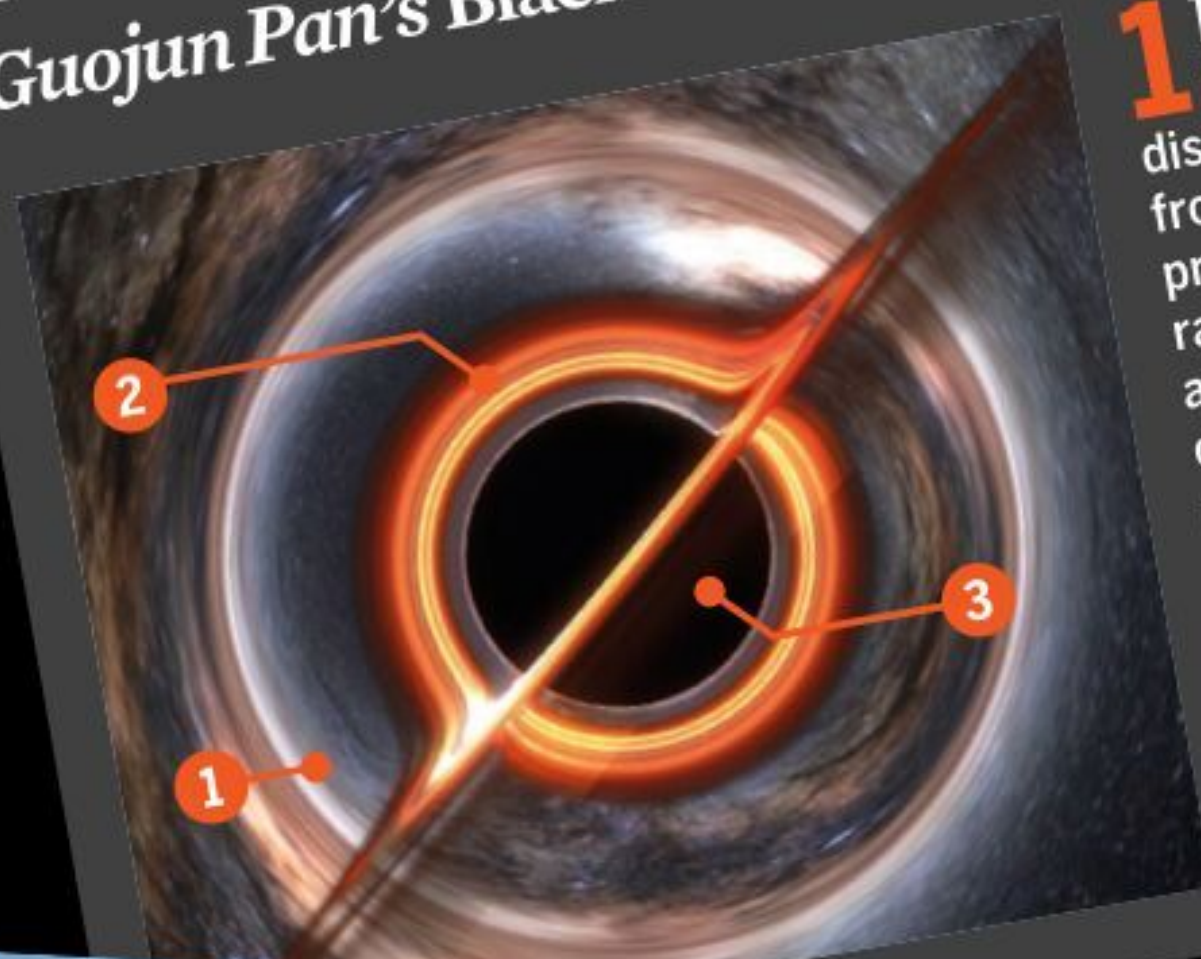
As Dixon concludes, “What a cool way to be able to learn about the amazing reality that we find ourselves in, and that the universe is weirder than anyone ever imagined.” It remains difficult to conceive of a gravity sim wholly based around Einstein’s theories, but if the above projects are any indication, it’s only a matter of time before somebody takes the plunge. ■

SPACE AND  
TIME ARE  
ACTUALLY A  
SINGLE,  
FLUCTUATING ENTITY



# ANATOMY OF A BLACK HOLE

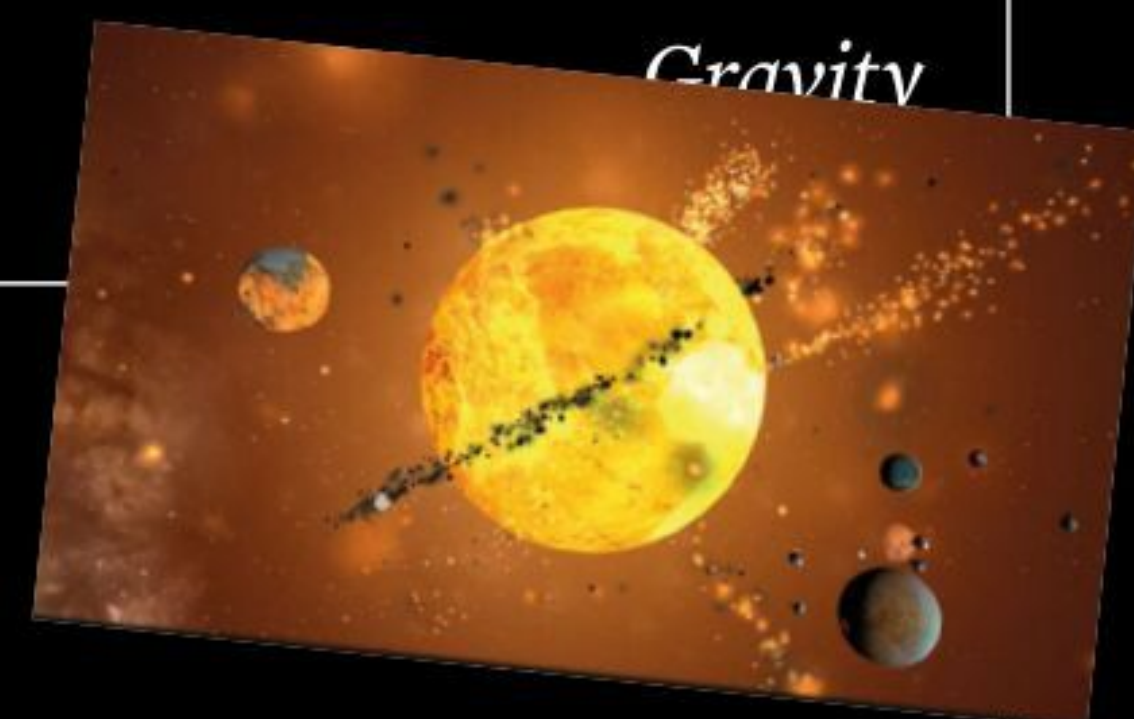
Guojun Pan's Black Hole Simulator allows us to get up close and personal



**1 THE HALO** Black holes distort light coming from behind them, producing a banded radiance surrounding an impermeable circle – a phenomenon known as gravitational lensing, which allows astronomers to detect objects that don't give off light themselves.

**2 THE EVENT HORIZON** A theoretical boundary beyond which gravity is so strong that light can't escape. A ship falling towards the event horizon will appear to slow down rather than crossing it, because events within the horizon can't affect an external observer.

**3 THE SINGULARITY** The ultimate oblivion, where spacetime curves beyond reckoning. An infinitely dense, infinitely small region that is simultaneously predicted by and in breach of our current theories of gravity. 'Where' and 'when' are empty sounds.



**LEFT:** Felipe Falanghe's upcoming *Balsa Model Flight Sim* trades *Kerbal's* orbits for complex wind physics.

**BELOW:** *Outer Wilds* includes matter-emitting white holes – a purely hypothetical phenomenon.





# SEEING THE


Exploring the strange and  
surprising world of invisibility  
in videogames.



# WINTER

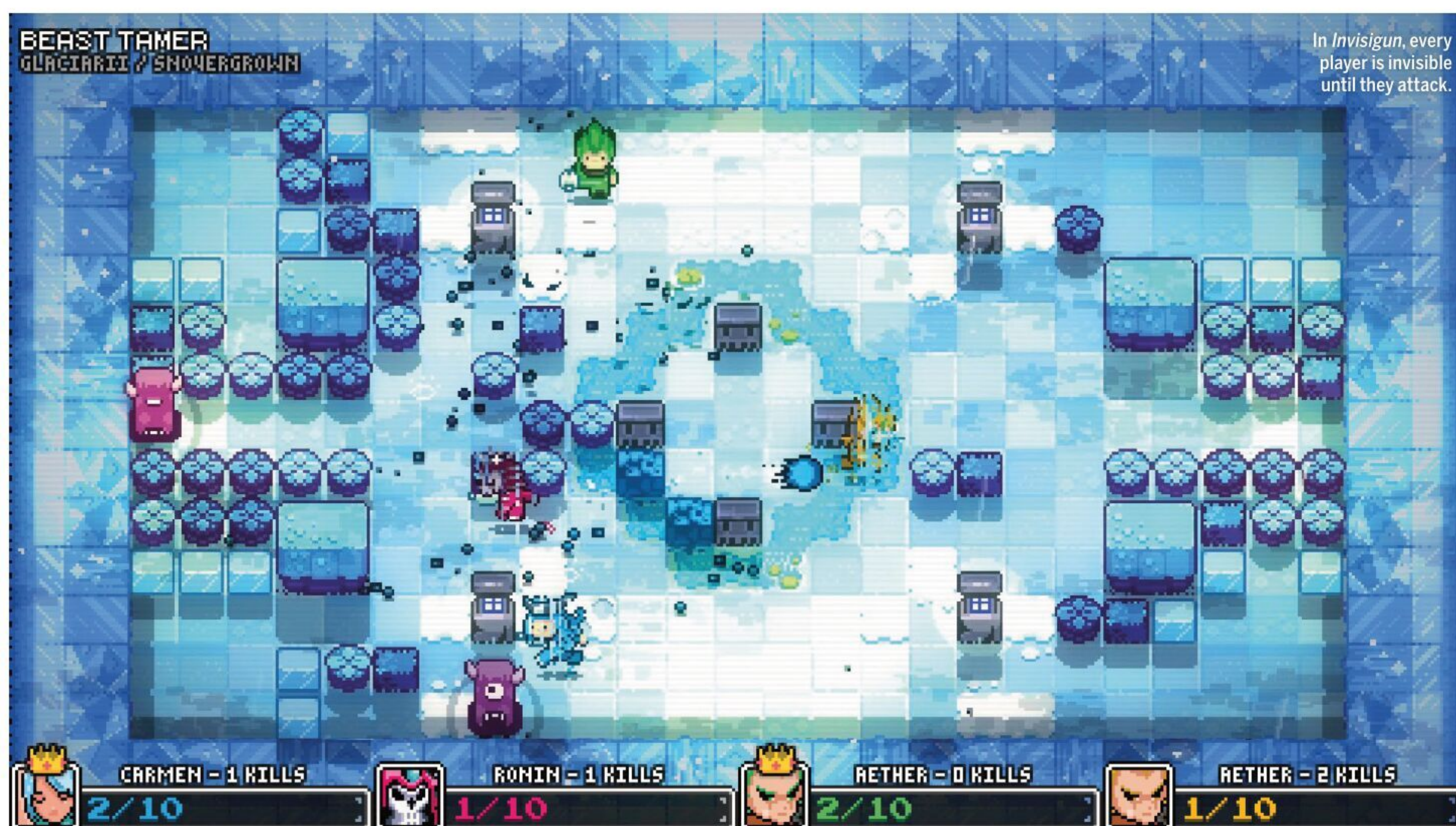
*By Edwin Evans-Thirlwell*





**n 1985, brothers James and Jim Thomas penned a film script, *The Hunter*, about an otherworldly creature armed with near-magical powers of camouflage. The script has a counter-intuitive take on the concept of invisibility. Rather than a mere blank spot, the Hunter exists as traces of motion without coherent form, designed to produce “a dizzying, subliminal experience” and “an intensely visual, highly emotional confrontation for the viewer.” During production, special effects teams used ‘inline mattes’ to superimpose concentric images of background foliage onto an actor. This fake translucency turns the landscape itself into an aggressor: when the Hunter or, as we know him today, the Predator finally attacks, it’s “as if the entire wall of the jungle were rushing in”.**





Paid homage to in every halfway-stealthy game from *Crysis* to *Deathloop*, the Predator is the nearest we have to a patron saint of invisibility in games. The weirdness of invisibility in the film – not just a Clancy-esque gizmo, but an assault on the viewer’s consciousness – reflects the startlingly varied forms invisibility takes in different species of game. Invisibility can be the ultimate power fantasy, as anybody who’s ever been brain-jacked by Sombra in *Overwatch* can attest. By extension, it can be a nightmare to balance, whether you’re designing a PvP shooter or simulating the reactions of AI guards to a cloaked invader. But it can also be an atmospheric device, a source of dread and uncanniness even in the mind of the camouflaged player. At its most arcane, it speaks to a long association between computer technology and magic, between feats of

stage illusion and the ocular tricks all videogames necessarily consist of.

### BEHIND THE CURTAIN

Among the *Predator*’s least expected descendants is Maid Marian or rather, Marianne, one of the playable characters in Sumo Newcastle’s bloodthirsty medieval heist game *Hood: Outlaws & Legends*. A grisly retelling of English folklore, *Hood* is all about completing objectives undetected: two teams of four must escape with a treasure chest while quietly murdering each other and fending off AI guards who double as a map-wide surveillance system, flagging anybody they spot on the enemy team’s HUD. Marianne is the team’s assassin (Robin Hood, of course, is the sniper), and while she doesn’t have infrared vision, she’s every bit as fearsome in the right hands as the interplanetary terror she’s inspired by.

*Hood*’s AI is slower to notice Marianne than other characters, and her passive Shadow ability lets her perform assassinations from the front. She can also toss smoke bombs to set up multiple targets for a takedown. But her most devastating trick is Shroud, which untags her and turns her character model semi-transparent. “We wanted it to almost feel like God mode,” says Andrew Willans, game director. “This ability that allows her to literally to walk in front of AI to assassinate them and chain those assassinations together

**THE PREDATOR  
IS THE NEAREST  
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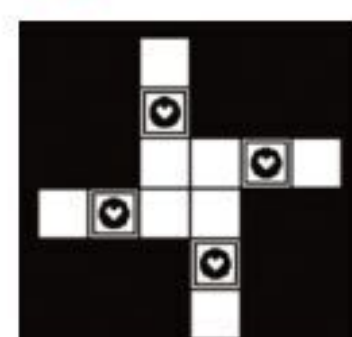
## HIDDEN AND DANGEROUS

*More clever examples of invisibility in games*



### SCREENCHEAT

Old school splitscreen shooter in which everyone’s invisible – so you can only see where others are by looking at their screen.



### INVISIBLE ELEPHANT

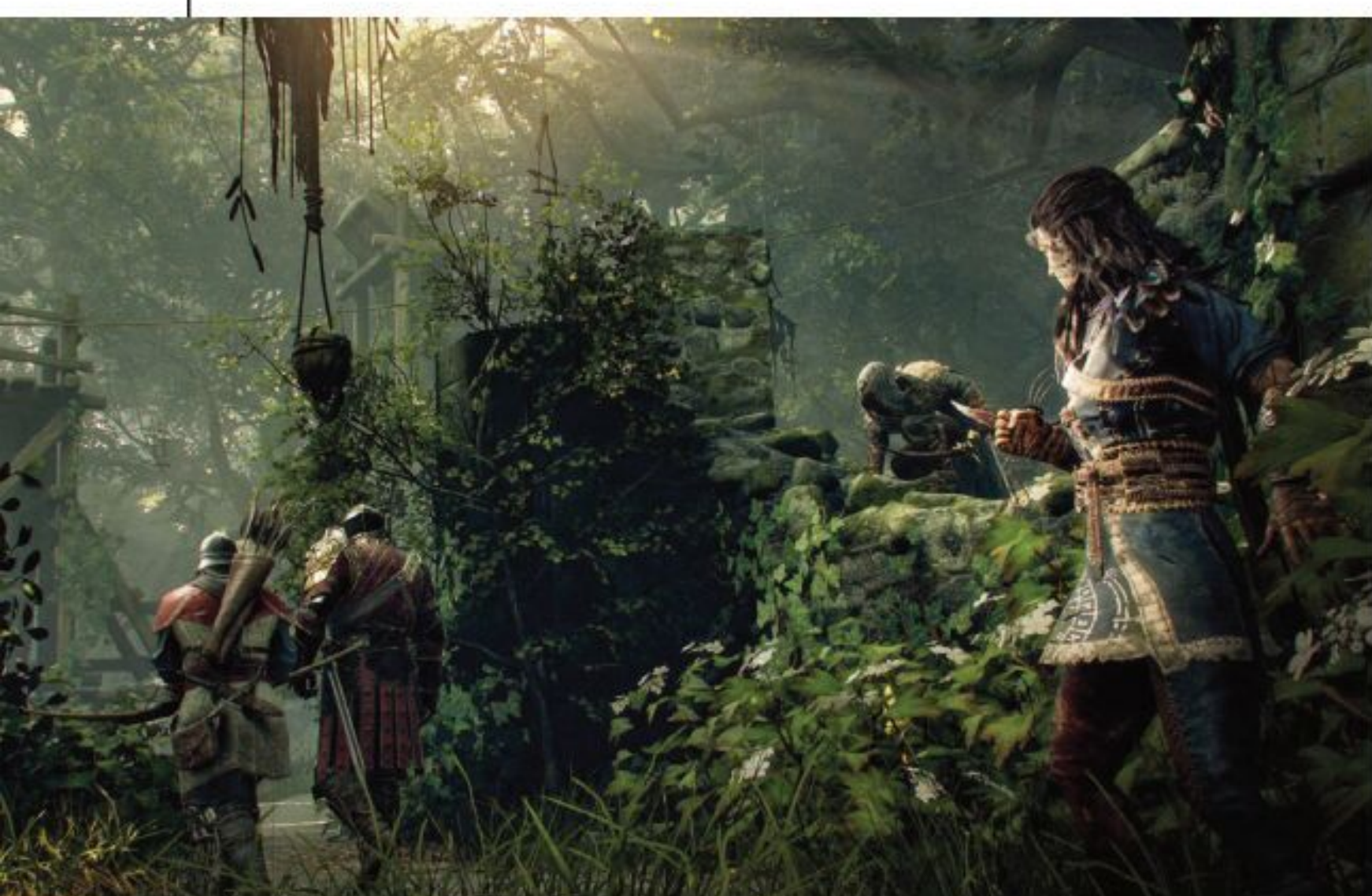
A puzzle game where you move an invisible object around a grid map with movable blocks, then see if you can deduce and draw its shape.



### CRYSIS

Your nanosuit’s stealth mode turns you translucent, but watch out – your recharging power reserve is small.





Maid Marian is reimagined as a deadly assassin in *Hood: Outlaws & Legends*.

» using perks, so that hopefully when you get into the flow, it's like shiv shiv shiv, one after another, and the AI just has this delayed response, 'Ooh, Steve's just been killed', but they can never quite pinpoint you."

Designing Shroud to work against AI was straightforward enough, Willans says. Designing it to feel fair in PvP was a different story. "I think that was probably one of the hardest things throughout development to get right." Sumo experimented with total invisibility, but this proved "impossible" for opponents, "so it was kind of working back from there." Some early prototypes for Shroud were downright horrifying. "We had a bug for about three months where her eyes stayed visible while cloaked. It looked so sinister – now *that* was truly the Predator."

### VIEW TO A KILL

A pivotal moment for Sumo was remembering that the *Predator* is much more apparent in motion. The creature's camouflage acts like a camera lens running over the backdrop, distorting the scenery. The challenge then became to decide exactly how transparent Marianne's Shroud should be – and how much control players should have over the effect. "She's roughly 50% [transparent] with her base ability," says Willans. "If you use a perk, you can actually increase that

to more like 75-80." The *Hood* team also drew on the lessons of *Eve: Valkyrie*, its VR space dogfighting game for CCP Games, which features a stealth ship influenced by the cloaking Klingon warships in *Star Trek*. In *Valkyrie* as in *Hood*, the faster you travel the more conspicuous the shimmer of the background through your craft.

Marianne's invisibility formed part of a larger conversation during development about immersiveness and mood. Sumo considered adding a visibility gauge, akin to *Thief's* light gem, but removed this for a couple of reasons, one being an inevitable gap between HUD feedback and what other players could actually see. "People would look at the user interface, and they'd go, 'all right, I'm safe. I'm in darkness', and then somebody comes up behind them and cracks them on the head, and [they're] like, where did that come from?" But Sumo also wanted to cultivate an atmosphere of dread, even in the mind of a hidden player. "I like to leave a little bit of ambiguity there," Willans says. "[So] that there's a bit of tension for you, even as the assassin – am I hidden enough? You almost want to get one of your mates to check – can you see me? Can you see the whites of my eyes? Can see the glint on my weapon?" Grounding the stealth in what players perceive makes *Hood's* strangely ahistorical setting more convincing, of course. "If you're hiding behind a tree which is breaking line of sight, that feels more natural than [saying that] you're crouched in a bush and are now fully invisible to other players."

You might expect *Battlefield*, the definitive photorealistic military shooter, to have similarly elaborate ideas about camouflage, but in a game of large-scale PvP with a fanbase of millions, questions of balance take priority. The recent *Battlefield 2042's* reconnaissance 'specialists' may seem dressed to blend in quicker than other types of soldier. Take Casper, described in-game as a "master of camouflage": he sports a ghillie suit, an iconic variety of stealth gear which uses long strips of cloth, twine and foliage to break

## SPECIAL STAGE

*Feats of illusion, shared by Mariano Tomatis*



**PHANTASMAGORIA**  
ETIENNE-GASPARD  
ROBERTSON

One of Robertson's tricks used a black shutter that could be rotated to view a space with a black backdrop. By rotating the shutter, people behind it appeared to disappear.



**PEPPER'S TRICK**  
JOHN HENRY  
PEPPER

Working with the engineer Henry Dircks, Pepper used a glass sheet to conjure ghosts. Reflections of actors in a hidden room would appear on-stage when



**THE VANISHING**  
LADY GEORGES  
MÉLIÈS

One of the earliest demonstrations of the magic of film editing, based on a famous stage trick involving a hidden trapdoor. Here, no trapdoor is needed.





up the wearer's profile against matching scenery. But as I learned during a discussion with the multiplayer design team, DICE wanted every character in the game to have the same "baseline for visibility", ghillie suit or no.

### UNIFORM APPEAL

The game's generous spread of camo patterns are more about visual variety – and, reading between the lines, microtransactions – than letting players seek tactical advantage. In practice, stealthy characters in *Battlefield 2042* are distinguished less by their ability to hide than by their ability to spot and tag using UAVs and sensors.

DICE has, however, flirted with invisibility modes at times in *Battlefield's* tumultuous history. *Battlefield 2042* is the gritty, near-future 'sequel' to *Battlefield 2142*, a work of outright science fiction featuring an active camouflage gadget that renders the wielder up to 90% transparent. Where *Hood* riffs on *Predator*, DICE's primary inspiration was anime film *Ghost in the Shell*, whose cyborg protagonist has thermo-optic mesh for skin. This idea of invisibility is far-fetched, but not impossible: real-world active camo technologies exist that continuously adapt an object's appearance to resemble its environment, such as Ray Alden's 2001 US patent for a "cloaking process" made up of segmented pixels.

Active camo in *Battlefield 2142* comes with hefty constraints. The device has a short-lived battery, gives off a telltale whine when activated, stands out more in well-lit chambers, and can't be wielded alongside a gun. But even given these drawbacks, it is an eerie and compelling tool of

war – warping the environment behind it and so encouraging both user and victim to think harder about the game's light levels and play of indoor and outdoor spaces. *Hood's* Shroud ability takes this further: to survive Marianne's attentions, you must ceaselessly monitor light sources, corners or high-contrast foliage for that telltale ripple of interference.

Playing as Marianne, you grow acutely conscious of how the Shroud interacts with certain textures or colours, and how conspicuous you are based on relative position and motion. Well, providing you can see yourself at all. "This is something that I struggle with even now in the game," Willans says. "When I use her perk to make her even more invisible, like 75% transparency, I lose connection with the character – suddenly I'm kind of just looking for an input that says 'assassinate'. I'm less connected with the game world. So you know, it's all psychological."

### GRID VERSUS EGO

That eerie sense of disconnection is integral to *Invisigun*, Sombr Studio's same-screen top-down blaster in which every player is invisible by default. Characters pop into view when firing or using their special abilities, but are otherwise only perceptible when they interact with the terrain – brushing through foliage, splashing in puddles and leaving footprints in snow. >>

**CHARACTERS  
POP INTO VIEW  
WHEN FIRING  
OR USING  
THEIR SPECIAL  
ABILITIES**

Active camo in *Battlefield 2142* was limited but powerful.





» *Invisigun*'s lead programmer, designer and audio engineer Shadi Muklashy came up with the concept while working on mech shooter *Hawken*, which features an invisibility device. Earlier versions of the game used analog movement, but this was confusing. "It was almost impossible to sneak around without bumping into anything, and while it was fun, it lacked precision and strategy. One of my game design friends suggested movement on a grid, with the rationale being that since invisibility is a challenging concept for the player, simplifying everything else would help."

The addition of the grid proved transformative. It allows you to deduce your movements by counting the steps from your last known position, turning an exercise in shooting first into a game of careful measurement and misdirection with a generous pinch of gut instinct – a wholly different way of using the environment in an arcade shooter. Muklashy invokes the concept of 'yomi' in competitive fighting games like *Street Fighter*. "[It] roughly translates to mind-reading, or knowing what your opponent is thinking and playing strategically in response. There's a back-and-forth dance throughout fighting game matches where the concept of yomi can snowball and shift dramatically as players learn each other's tendencies. I like to think that *Invisigun* has unlimited yomi due to the invisibility. Some players can make their opponents panic by simply doing nothing at all!"

Where Sumo's challenge with Marianne in *Hood* was to balance her Shroud ability for PvP, Muklashy's big hurdle with *Invisigun* was preserving this element of mind-reading when designing bot behaviour. "Everything the player does broadcasts 'disturbance' events, such as bumping into walls or stepping through puddles. The bots will notice the location of these events and work their way towards that location and possibly attempt to shoot towards that spot. Depending on the type of disturbance, they will seek out either an exact location, or a rough estimate within a certain radius when they reach line of sight to that spot."

Locking movement to a grid made things easier here too "since disturbance locations are often exact, and path-finding algorithms on a grid are straightforward." *Invisigun* bots have moments of believable disorientation or uncertainty,

depending on their skill level. "There are tolerances and random ranges for almost everything they do. This could be their reaction time when responding to a disturbance, to every once in a while making a misstep or two [...] to even not 'remembering' the precise spot they are seeking."

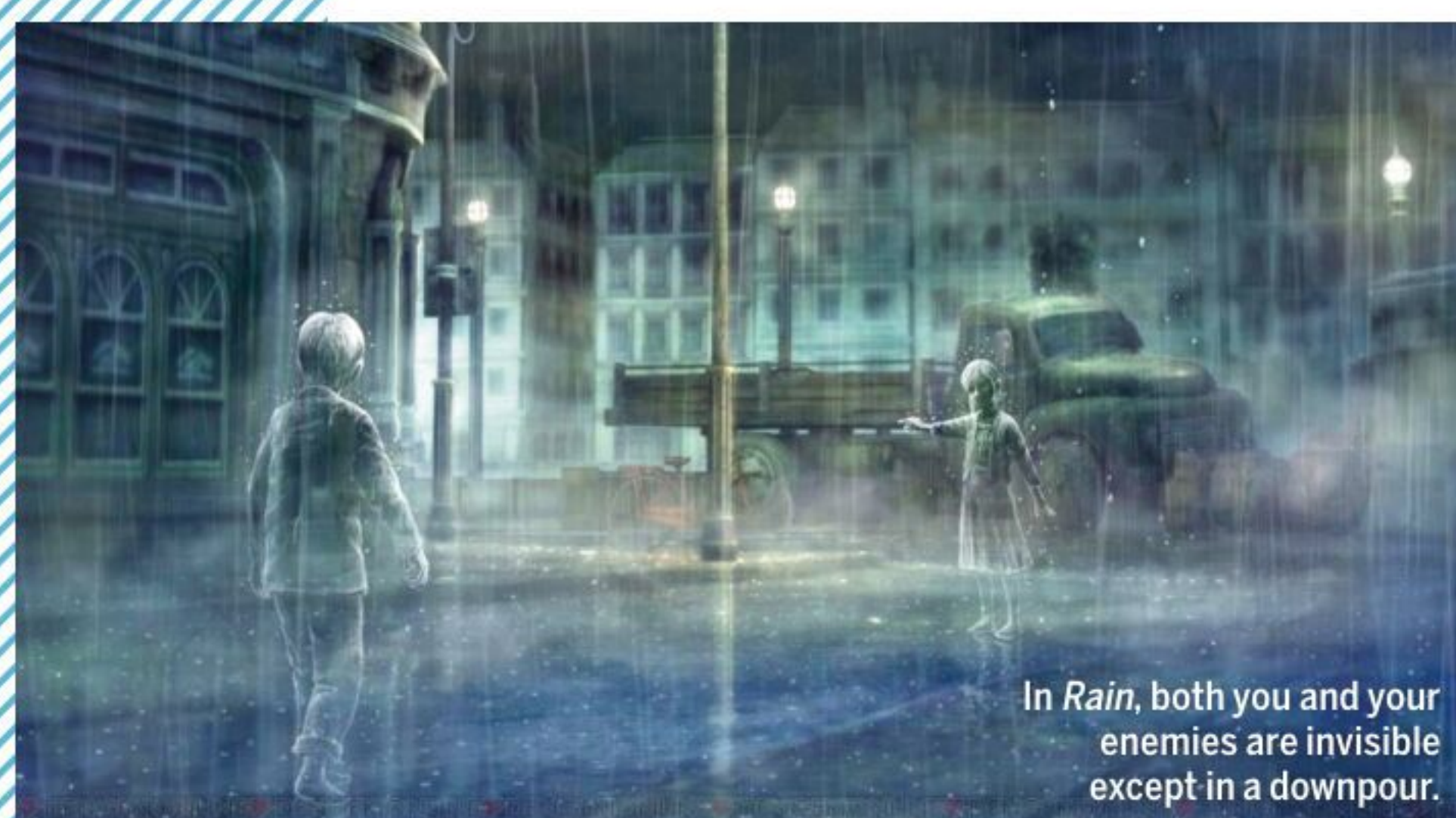
### DECOY POLLOI

Thinking about how a player or enemy should feel about an invisible foe opens the way to thinking about invisibility not as a weapon, but an unacknowledged cousin of stage illusion – reliant on manipulating your states of mind as much as the limits of human perception. Digital artist and researcher Mariano Tomatis links the disappearing and reappearing tricks performed by magicians such as John Henry Pepper to modern heads-up displays on car windshields and augmented reality headsets. Both, he points out, are essentially the result of cunning combinations of light and glass. Tomatis also makes connections between military tech and stagecraft: take dazzle camouflage in naval warfare, designed to confuse observers about the type of ship under scrutiny. This too is "based on the same principles used to decorate props involved in stage magic tricks".

Videogames featuring invisibility and camouflage inherit this strange, ancient relationship between gadgetry and sorcery, summed up by the famous Arthur C Clarke quote that "any sufficiently advanced technology is indistinguishable from magic". In a more immediate sense, videogames are all feats of illusion magic themselves. "All stage magic is based on an invisible ingredient – the trick," Tomatis notes. This is no less true of virtual worlds: all are generated from the unseen workings of computer code, and not even the most expensive and painstaking simulations are literally and exactly what they appear to be.

One game that embraces the strangeness of this is *Nix Umbra*, a first-person horror ritual set in an enchanted forest. Visible only by the short-ranged glare of your flaming sword, the game's world is randomly generated: its horror

**"IT ROUGHLY  
TRANSLATES TO  
MIND READING, OR  
KNOWING WHAT  
YOUR OPPONENT  
IS THINKING"**



In *Rain*, both you and your enemies are invisible except in a downpour.







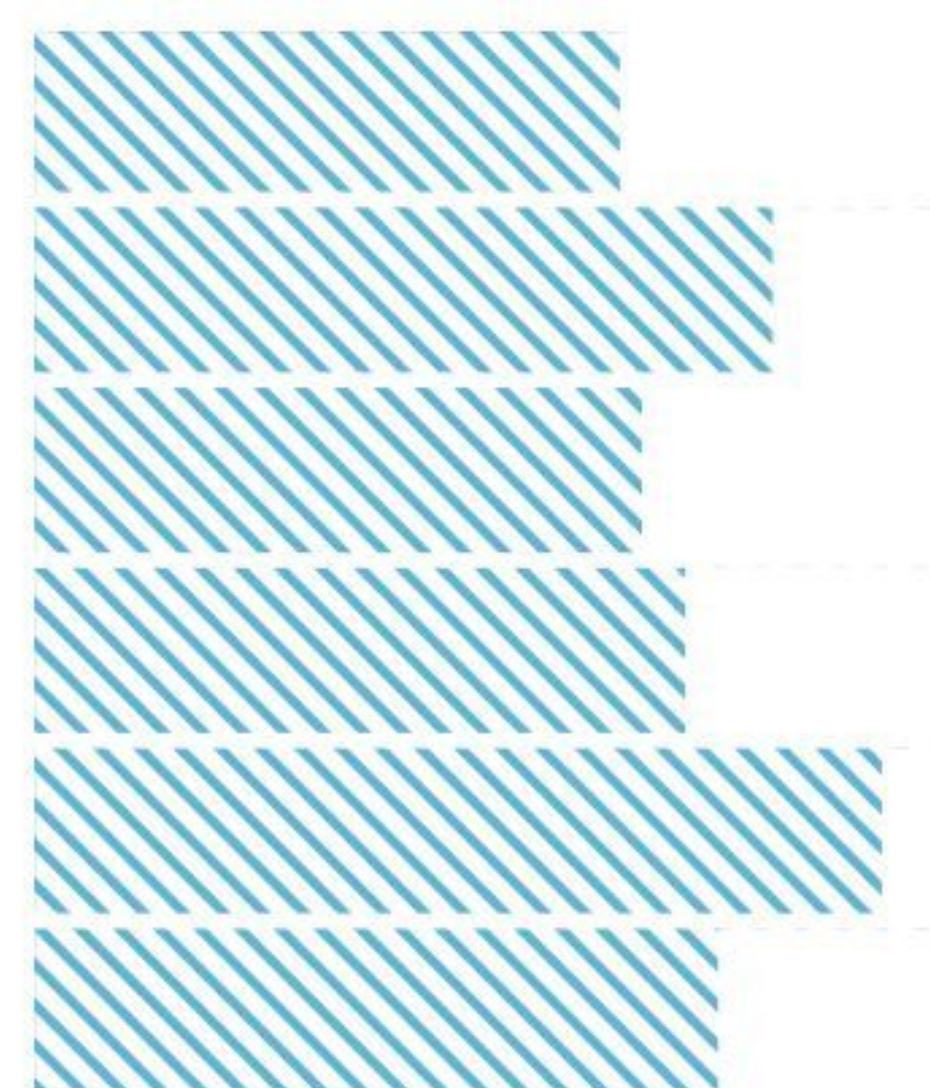
Deathloop's arsenal of supernatural powers includes invisibility.

comes from not knowing how much of the unseen landscape really exists to be interacted with, and how much has yet to be conjured. "It's that uncertainty of what secrets the world is hiding from you that make me want to play a game," says ilzard, the game's sole developer. "Also there is a sense of wonder of discovering things by yourself without being told how it works." The developer describes *Nix Umbra* as a work of the "occult", a term that stems from the Latin for concealment. "I tried to build everything on top of this concept and to let the players try to bring to light its mechanics with each new death."

### GROVING THREAT

It would be a shame to spoil too much of *Nix Umbra*, but suffice it to say that certain... entities

are invisible even in the light of your sword, their presence telegraphed by screen distortion and trees bursting into flame. "I was interested in making something abstract," ilzard explains. "So it is not so much a creature in the traditional sense [but] the concept of death itself that I wanted to project. When 'death' is close, flashing lights, subliminal skulls and kaleidoscopic shapes starts to assault your vision." These 'psychedelic visual stimuli' – which riff as much on surrealist or folk horror cinema as the likes of *Amnesia* or *Slender* – are



designed to turn your imagination against you. As with the Predator, it's like the forest itself is closing in.

Invisibility in games, is about more than avoiding detection. It's a complex ambient device that cuts to the heart of videogames as a technological art form. Visualizing equipment like active camo, ensuring foes are just perceptible enough, and imagining how bots should respond – all these challenges invite haunting questions about our interactions with virtual worlds that are fundamentally works of the unseen. ■

## LOOK TWICE

A few of our favourite invisibility-busting tools



### HEAT VISION

The Predator's other signature gadget, cherished by any stealth-oriented shooter. Useful for tracking down cloaked adversaries.



### BOLTS

The world of *STALKER* is full of invisible and often deadly anomalies. Fortunately, you can always lob rusty bolts at suspicious areas to trigger them safely.



### CAMERA OBSCURA

*Fatal Frame*'s chunky antique snapper is your only means of sensing, destroying, or communicating with the ghosts that riddle each game's landscape.



### WATER

Among the worst of *Amnesia: The Dark Descent*'s bogeys is the invisible Kaernk. Listen out for the splash of feet as you explore those castle cisterns.



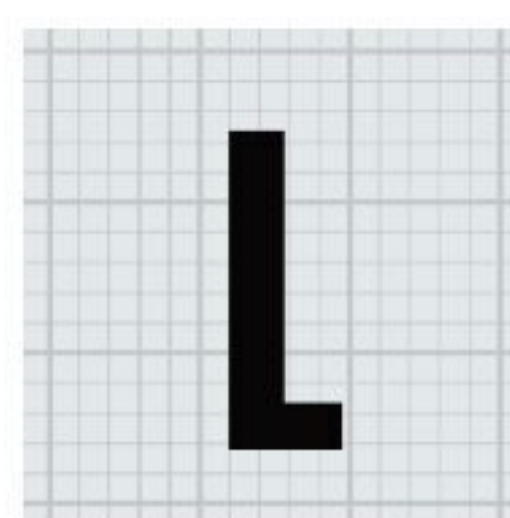




# THE MAKING OF DEAD SPACE

With a remake on the horizon, the developers of a sci-fi horror classic tell their story

By Robert Zak



Looking at the recent early footage of the *Dead Space* remake, the most striking thing is just how similar it looks to the 13-year-old original. Sure, it's shinier and glossier and your Plasma Cutter now sends flesh flying off Necromorphs like porridge in the wind, but overall it puts into perspective just what a masterpiece the first game was.

As gamers start derusting their Ripper blades and lubing their Line Guns with WD-40 in preparation for the remake, I've looked back with the developers of the original *Dead Space*

on how they brought together a uniquely timeless classic. When *Dead Space* creator and Visceral Games general manager Glen Schofield proposed a sci-fi horror game to EA, he says that "EA was a bit freaked out, because it was something they hadn't done since *System Shock*."

Schofield adjusted his idea into a potential *System Shock 3*, more with the desire to convince EA than to create a true successor to the immersive sim. This seeded the idea with the publisher, though the breakthrough came when *Resident Evil 4* launched in 2005. Suddenly, survival horror looked commercially viable again, and in the end it was the now-famous "*Resident Evil* in space" pitch that sealed the deal.



Many of the game's developers, including producer Chuck Beaver and production designer Ben Wanat, were brought onto *Dead Space* fresh from licensed titles in the Lord of the Rings and Bond franchises. "We were all coming from the straitjackets of working with licensed IPs where you have to obey all the rules really carefully," says Chuck. "So when this opportunity came to do the new IP, everyone was ready to fly wild creatively."

### UI NOT?

One of the hallmarks of *Dead Space* (that's being retained for the remake) was the completely in-world UI; video communication and the inventory were hologram projections beamed from Isaac's suit, upgrades were purchased at machines with proper in-game screens, ammo counts were displayed on Isaac's weapons and – lest we forget – the health bar was elegantly displayed along the spinal ridges of Isaac's suit. The immersion was unparalleled.

One of the concerns when designing this UI was that it would be too bright – "lit up like a Christmas tree", as Ben Wanat puts it. But very quickly, Ben himself put those concerns to bed, according to Chuck Beaver. "He went away for a weekend and came back with a mockup of the UI that was so good that it ran through the entire series," says Chuck. "He did it all using the VFX system."

Ben's VFX mockup was so good that it was used until late in development. "Each of those little health bars was an effect, and eventually somebody in engineering changed the colour and we switched

it out for a proper tube and projected graphic," Ben tells me.

The ghostly grey-blue colour of these elements, especially in the video communications, helped evoke that well-founded feeling that you were chasing ghosts around the forsaken Planet-Cracker ship, The USG Ishimura.

### ASSEMBLING ISHIMURA

At a time when 1080p wasn't yet the norm on most displays, the fine architecture of the Ishimura got a little lost amidst the jagged antialiasing and murky resolutions. But playing it on PC today, those uninviting ridges of the ship's

exterior look like they could skewer a meteor, and your eyes are drawn to the eerie shadows lingering in distant corners of larger spaces. There's a harsh texture to this ship, which seems to groan and breathe with mechanical menace.

Art director Ian Milham fills me in on the associations and inspirations for the Ishimura. "It was a mashup of gothic cathedral and offshore oil rig – both are huge in scale and deconstructed, with their guts clearly visible," he tells me. "The light fixtures were based on dentist's lights, which have a lot of uncomfortable and scary connotations. The signage was

The designers were obsessed with parallaxing in big spaces, resulting in ominous shadows and a sense of sci-fi gothic grandeur.



## BEAST MODE

*Dead Space* nearly had evil animals, as these concepts show



### CAT

The developer figured spaceships would favour hairless cats, because they don't shed fur into air ducts. And it makes them extra creepy when they're turned into Necromorphs.



### DOG

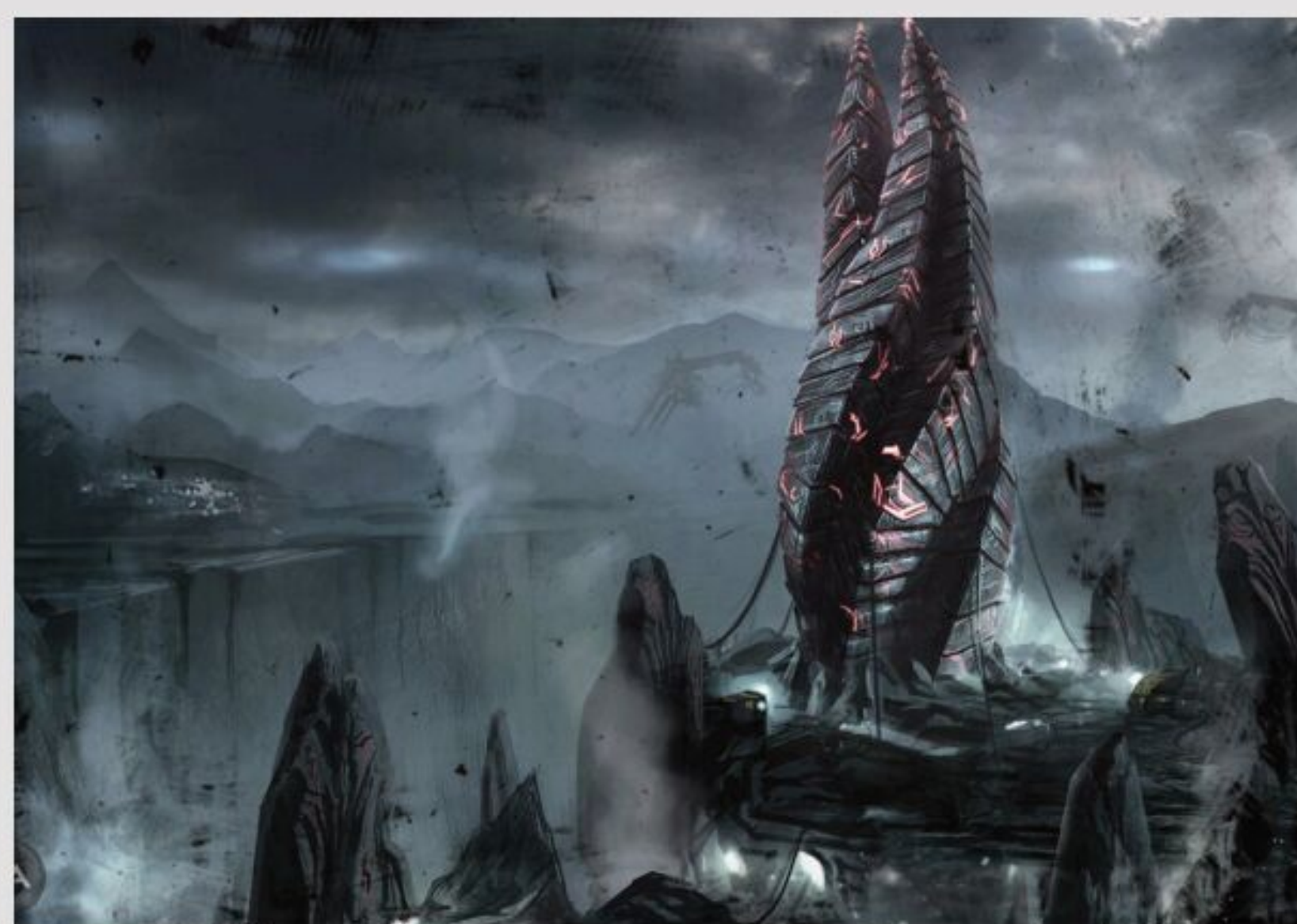
Maybe a little too close to The Thing, eh? Makes sense that humans would bring dogs into space, though – they're man's best friend. Unfortunately that the Marker would've turned them into man's worst enemy.



### CHICKEN

According to the dev's notes, chickens' small size and egg laying make them perfect space companions. But as alien hosts, they're reduced to "a squealing mass of beak and sinew". Lovely.





**ABOVE:** Some of the developers regret not having more kinesis-based puzzles in *Dead Space*.

**FAR LEFT:** The glowing golden hue is a running theme through *Dead Space*.

inspired by Japanese subway signs, since they also are helping people through a labyrinth environment.”

But the Ishimura wasn’t always such a gracefully gloomy space. “When making the prototype for the original Xbox, we built some corridors and areas of the Ishimura, and it looked like the walls were made out of chainsaws and claws and stuff,” Ben recalls. “I was like, ‘It’s a little on the nose, you know?’ So the ship wants to kill you? No shit, there’s bleeding fangs sticking out of the walls!”

Soon after this, Ben took a lead role in crafting details into the Ishimura. “I would carve into the negative space to create lots of claustrophobic 90-degree bends, silhouettes and basically anything I

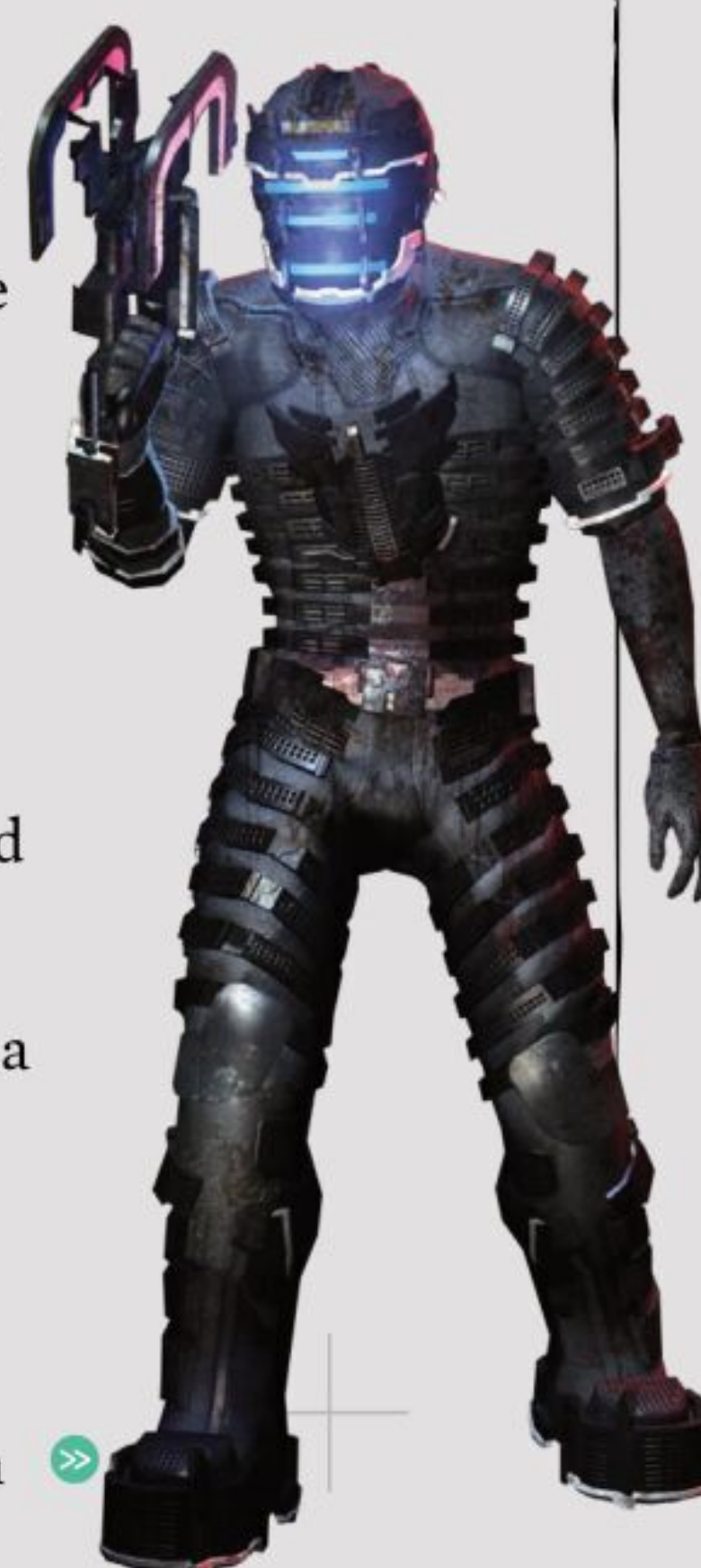
could do to fuck with your head while you were moving through the space,” he says. “The basic thing was to get parallax everywhere we could. Parallax always gives you constantly shifting shadows and points of view on the room.”

**“SO THE SHIP WANTS TO KILL YOU?  
NO SHIT, THERE’S BLEEDING FANGS  
STICKING OUT OF THE WALLS!”**

Early in the game, the Engine Room showcases this sensory intensity; the space is enshrouded with fog, with strange shapes and shadows cast by the gut-like pipes and aggressive geometry of the space. You feel like you’re deep in the bowels of a machine, always threatening to swallow you up.

Few horror games play on the tension between power fantasy and powerlessness quite like this. Isaac may be an engineer, but his two key abilities let him slow down time and lift heavy metal equipment by pointing his hand at it – probably the two hippest videogame superpowers of the 2000s. He’s a metalclad medieval knight with a sci-fi makeover, slicing down enemies whose spindly appendages are just begging to be severed by his power tools.

But despite your formidable arsenal, *Dead Space* always feels like a struggle, largely thanks to Isaac moving around very much like the metal-coated man that he is. He’s a slow runner, turns with the deliberation of a cargo ferry, and inexplicably stops for a second when

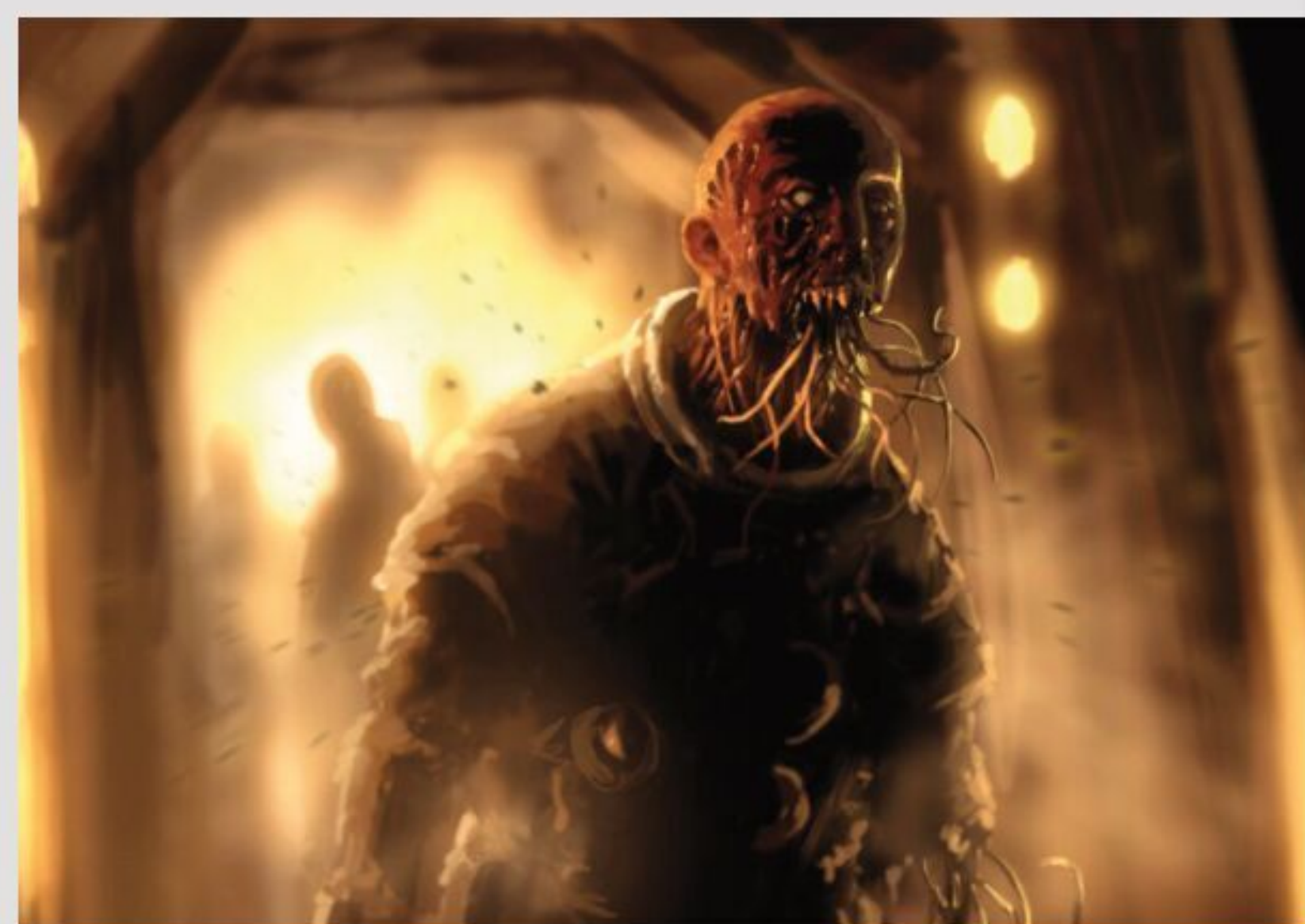
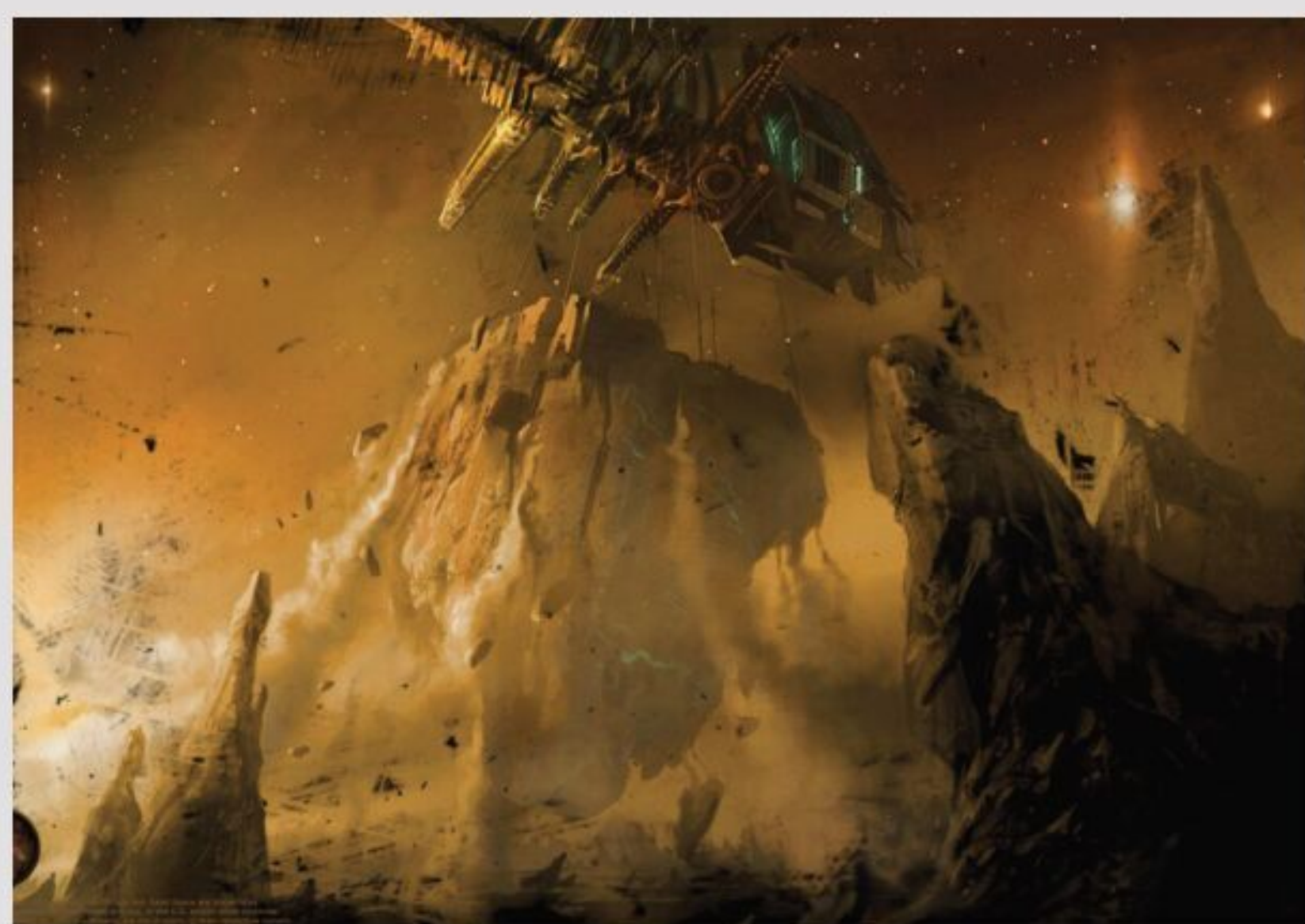






**ABOVE:** Limbs or no limbs, the Necromorphs keep coming at you.

**RIGHT:** *Silent Hill*, *Resident Evil*, and the *Alien* films were all influences.



» you change weapons (prompting so many screams of “What the fuck are you doing Isaac?!”).

This cumbersome movement was of course inspired by *Resident Evil 4*, but in a new console generation shaped by fast, fluid shooters like *Halo*, *Call of Duty*, even *Gears of War*, Visceral had to adapt to the changing times.

“We installed *Resident Evil 4* tank controls in *Dead Space*. It was really slow, and you couldn’t move while firing,” Chuck tells me. “We were so enamoured with that system at the time we were making *Dead Space*. The team was like, ‘This is a survival horror game, you’re supposed to be clunky.’”

But these idealistic visions of survival horror had to be

compromised. “It took three focus tests to make it clear that the audience had moved on from old-fashioned horror controls,” he says ruefully. Shoot-and-move was reinstated, and very late in development Glen altered Isaac’s

## “WE INSTALLED RESIDENT EVIL 4 TANK CONTROLS IN DEAD SPACE. IT WAS REALLY SLOW”

animations to create the illusion that he was moving faster than he actually was.

Little did Visceral know that years later videogame horror would return to that slower, panic-inducing pace with games like *Alien: Isolation*, *Resident Evil 2: REmake*, and the upcoming *Dead Space* remake.

### SEVERANCE SLAY

The Necromorphs were a unique kind of threat – fragile yet threatening. You could blow a running Necromorph’s legs out from under them, with the momentum sending their upper body hurtling

towards you. It appears dead, but then props itself up by its claws and begins crawling towards you. Even though the creature is crippled and at the mercy of your heavy metal boots, it’s

relentless in pursuing you.

The Necromorphs took quite a bit of tweaking and stretching to feel readable and fun. “We started elongating limbs and making things thinner, creating kind of exposed pulpy areas where there’s a little bit more of an obvious connection to where the dismemberment point was



going to be," says Ben. "We used weakspot in some areas, but the glowing weakspot is such a horrible cliché that we tried to refrain from it where we could."

*Dead Space* had its share of in-your-face scripted thrills, but there were some neat systemic tricks too, such as the vents that Necromorphs may or may not ambush you from depending on how close you stood to them. "It was a really intricate system of vents that we built throughout the game," Glen tells me. "If you listen, you'll actually hear enemies crawl through the vents, and whenever we could we'd try to have a real enemy in there."

### BACK FROM THE DEAD

Visceral imbued *Dead Space* with its own strong identity, while borrowing from the great works in its genre. Glen Schofield happily admits that the air-raid siren you hear in the game's ambience is an homage to Akira Yamaoka and the nightmare sequence in *Silent Hill*. The hallucinations and dementia angle came relatively late in development, and were pushed by Ben Wanat's love of *Solaris*, while its almost anachronistic twist on *Resident Evil 4*'s control style has aged surprisingly well, making the game feel more timeless than many of its contemporaries.

When I ask the developers what *Dead Space* remake needs to retain from the original, the unifying theme is immersion, with Ben Wanat zeroing in on the audio in particular. "As long as they understand the essence of what's happening with that audio mix and why almost all of the psychology of the terror of that game is from the audio, then I think they're on a really good path," he says.

That *Dead Space* essence will also be palpable in another upcoming game. Glen Schofield is currently working with his new studio Sledgehammer Games on *Callisto Protocol*, a spiritual successor to *Dead Space* set on a prison colony on the titular Jovian moon. One of the key lessons he's carrying over from *Dead Space* is to be unpredictable in delivering scares.

Glen recounts how at one point during the development of *Dead Space* an executive proposed a 'horror meter' that creates a scare on a 20-minute timer. "That is the exact opposite of what I want," says Glen. "Something I'm taking into *Callisto* is that scaring intention is almost like a gut feel when you're making it. There's no 'right' timing, it's really a matter of how you feel as you're going through the game."

One thing that's certain is that the *Dead Space* remake developer, Motion Studios, is working with a finely crafted masterpiece, whose own sequels showed how hard it was to build upon. Perhaps the best advice for the team behind the remake is to make like Isaac: tread carefully, target the weakpoints, and leave the rest of the body intact. ■

Isaac's suit was beautiful, making him resemble a medieval knight with a sci-fi makeover.

### ISAAC THE EA ICON

EA loved having *Dead Space*'s hero cameo in other games



**DRAGON AGE 2**  
We've said it before, Isaac's armour is perfectly suited to a fantasy-medieval type setting. The 'Ser Isaac' armour in *Dragon Age II* is a case in point.



**SKATE 3**  
I can't imagine all that metal on Isaac's suit is great for catching air, but at least his safety-first suit comes with integrated knee and elbow-pads.



**TIGER WOODS PGA TOUR**  
Isaac's golfing debut may seem strange, but it was later revealed that the *Dead Space* engine was a fork of that used in PGA Tour.



**PLAYSTATION ALL-STARS BATTLE ROYALE**  
Sony's attempt at *Smash Bros* always lacked that star quality, but we got to see Isaac called in as a DLC character.



FEATURE

# MAXIMIZING THE

MAXIMUM | Elden Ring



# MINIMUM

Inside the often-thankless, quietly imaginative task of developing for **LOW-SPEC GAMING**

*By Edwin Evans-Thirlwell*

Elden Ring | **MINIMUM**





uhai Labs co-founder Giles Goddard thinks minimum settings are going out of fashion. A veteran of

Nintendo in Japan who has worked on everything from Amiga and N64 to Wii and Oculus Quest, he's noticed a change over the years with regard to developing for different PC specifications. "It used to be that the developers would aim for the lowest spec, and they'd make it look great on that, regardless of anything," he says. "And then, if you had a faster PC or graphics board, you could put more bells and whistles on top for post-processing effects or whatever, but only to make what was already there nicer-looking."

"I think nowadays, because everybody's got a [powerful computer] the bar is so high that all the AAA makers are basically just aiming for the highest spec PCs. They're assuming that if you're going to pay that much for the game, you're also going to pay a lot for your gaming setup [so] obviously, they spend a lot of money, time, and effort making the games as great as possible on those machines. I don't think it's really in their interest any more to aim for the lower spec. It definitely used to be the priority, I think, maybe ten or twenty years ago."

### HIGH LIFE, LOW SPEC

These shifting priorities are reflected, Goddard suggests, in the way games are discussed and reported on. "It used to be quite a hot topic – if you turn on these settings on this PC with these specs you can get these kind of graphics. It used to be in all the reviews and all the magazines, how to get the most out of this game. And that's just not talked about – you just assume it's going to be max settings."

"That goes with my experience of this sort of stuff," agrees Terry Goodwin, technical director at Lab42, whose projects include the PC versions of *Yakuza 0* and *Yakuza Kiwami*. Studios that specialise in porting tend to feel it most when clients neglect lower spec hardware. "Especially with developers that are very PC-focused, even if their goal is not to make the most amazing-looking game, they often don't think

about the low end at all, which is a problem for us when they come along and say they want a Switch version, or whatever." On PC especially, he says, "Optimisation is not as considered as much as it probably should be."

One reason it's a fine time to pay more attention to lower spec gaming is that it's better for the environment. Playing with the settings turned down tends to consume less electricity, though newer components may be more energy-efficient in themselves, and supporting older hardware is obviously more sustainable. Developing for cheaper components also makes games more inclusive – an important extension of conversations about diverse representation or creating accessibility options for players with disabilities. But the simpler point is that tailoring and optimising a game for leaner PCs involves a lot of craft that tends to be disregarded amid the industry's endless arms race for the cutting edge. It's every bit as much a 'feat of technology' as capitalising on the latest rendering techniques.

**BOTTOM:** *GTFO* uses fog as a tool for both atmosphere and performance.

### TAKE YOUR BENCHMARKS

Choosing and developing for a minimum specification is a complicated battle that, ideally, begins on the very first day of production. "When you set up a production, you set up budgets, right?" says Hjalmar Vikström, co-founder and game design director at 10 Chambers, developer of horror squad shooter *GTFO*. "So the financial budgets, of course, but then you have performance budgets, memory, RAM, some kind of performance goal for certain hardware. And that's basically

**"WHAT'S THE TARGET AUDIENCE, WHAT'S THE LOW SPEC AND THE RECOMMENDED SPEC?"**





## DEAD RECKONINGS

René Tschacher explains how the dev tailors simulations like *Dead Man's Diary* for lower-spec PCs



"We usually get the best results from the resolution, or resolution scaling. The range of shadows is also an aspect that can be easily scaled down."



"Performance, lighting and shadow rendering [are the biggest challenges for photorealistic 3D games]. Object optimisation and powerful shaders must also be considered."



where that whole thing starts. What's the target audience, what's the low spec and the recommended spec? And what you do then is you test for that all the time.

"If [any single] team is responsible for the low spec, that would be the delivery team in our company, or what you would call QA." But adhering to those target specifications is a task for everybody. "There's always a big combination of QA, programming, technical artists, and render programmers and system programmers, a whole big team effort to make the game perform. In any production I've been on, performance is a concept you always work on, because when a game is not performing, the rest of the experience is suffering."

Hence, among other things, *GTFO*'s marvellous fog, which blends and accommodates the needs of artists, narrative designers and programmers. On one level it's a homage to *Alien*'s murky corridors; on another, a way of avoiding 'load steps' or incremental environment loading, to keep the framerate up and minimise work for artists. "So performance is a thing, and the visual inspiration comes from *Alien*, and we're a small team with limitations





on our art pipeline – all that comes together to create a plan. Fog is not there for performance, but [...] it fits together and we leverage that as much as we can.” Some players miss the point here, Vikström adds, assuming that the fog exists simply to lessen the load on the game’s engine. “The fog in *GTFO* is so much more than just a vision limiter, it’s a mood setter, right? So sometimes I get the question, can you disable the fog? And I’m like, ‘No, you’re basically disabling half the game.’”

For a small team like 10 Chambers, testing for things that threaten the target specifications can be practically a horror game itself. “A simple chair could be low res in polygons, but then accidentally have a super high res shadow mesh, or something like that. It’s a simple problem to fix, but first, somebody needs to find that. So you need to have an analytic toolset to evaluate the complexity of the meshes. Do some kind of filtering to see if, oh, there’s a shadow mesh here with tens of thousands of polygons or triangles – that doesn’t make sense. Or maybe the test is automated, and then maybe somebody needs to add safeguards, but it could also be that our render programmer needs to optimise the order in which things are rendered, or an assistant programmer needs to make sure that chairs are never rendered if they’re behind a door.”

It might sound more sensible to focus on honing an optimum look and framerate, then dialling things back for less powerful systems down the road, but this can be catastrophic, Vikström says. “It’s really hard to go down in quality after years of production. You need to plan for low spec straight away, and constantly



work towards it. Because after a couple of years, if you don’t do that, it just becomes too big of a hurdle. And then your low spec slowly creeps up until it’s meeting your high spec.”

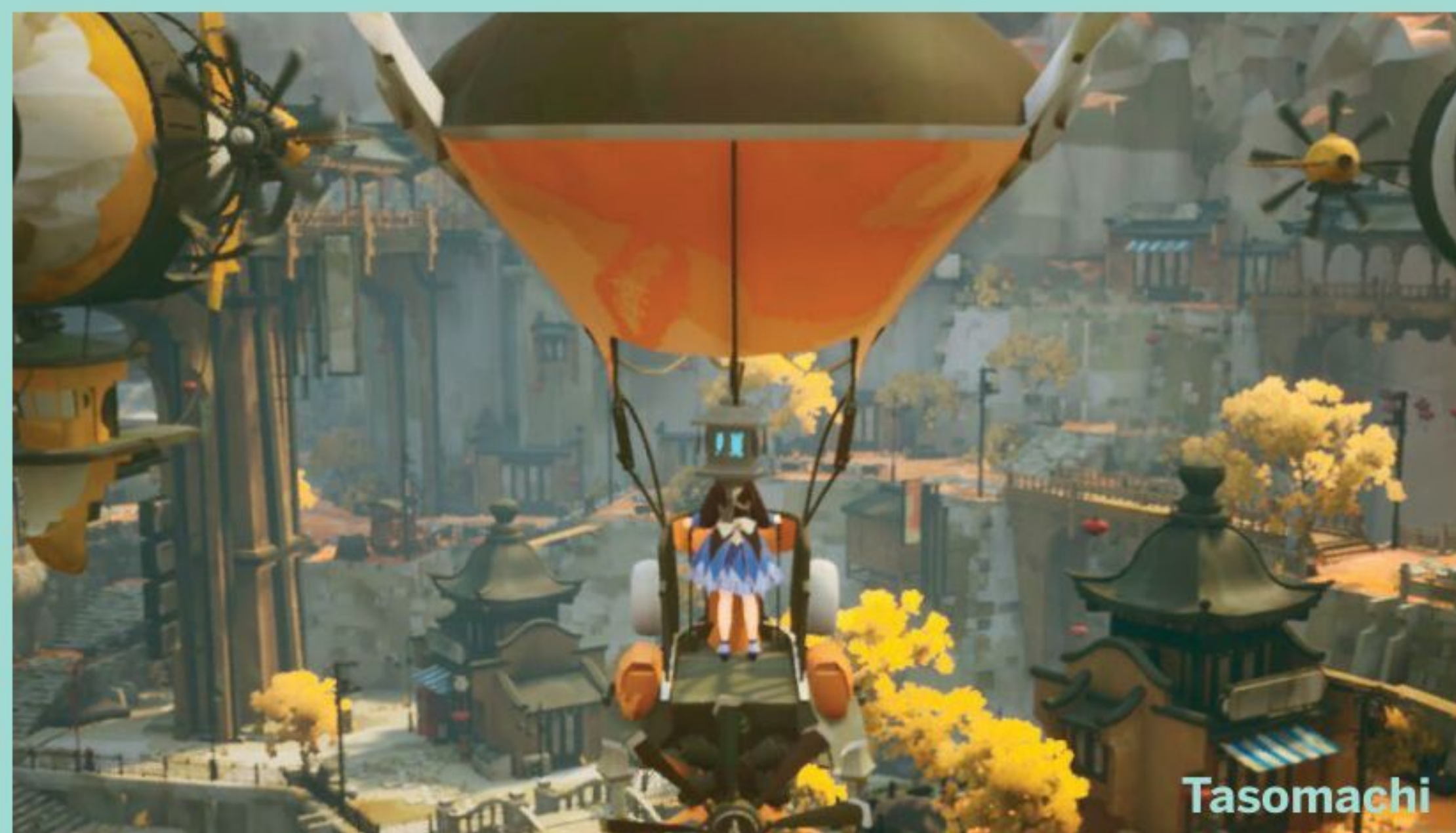
### SETTING EXPECTATIONS

While he feels that developers today disregard lower spec machines, Goddard also suggests that today’s players have more ways of customising their PC games today. “You have settings for everything, like turning the rain on and off. I think it’s become more a question of personal preference, rather than whether your PC can handle it, and I think people expect to have the control. Because maybe they have really specced-out their PC and they know exactly what

**ABOVE:** Lab42 repurposed existing features of the game’s engine into graphics options for low-spec machines.

it can do. Whereas in the old days, it was basically choosing low, medium or high, and the game would decide what to turn off and on.”

This certainly encapsulates Lab42’s approach to porting *Yakuza*. “A lot of the time, designing settings isn’t a matter of making those things exist, but exposing them,” Goodwin comments. “[For *Yakuza*] we looked at what was in the engine, and just made a slider and graphics option for literally everything that was going on.” The studio repurposed the game’s level-of-detail system, for



## SKY HIGH

Alexander Murphy on bringing *MoH: Above and Beyond* to the Oculus Quest platform



“Respawn had done such a fantastic job giving players an immersive experience by playing a wide range of audio tracks simultaneously. To get the performance level we wanted while staying within budget, we removed some subtler tracks after optimising the sound.”



“Framerate is king in VR, so that took priority with graphics resolution close behind. We also added some features, such as the ability to toggle the multisampling anti-aliasing level. Since this is a VR project, we had to set up an entirely new build and testing pipeline.”



“There is a misconception that [porting] is ‘easy’ since you have the base game to work from. In reality, optimisation is a difficult challenge that requires a robust set of tools, strict technical guidelines and talented artists who know how to make the game shine.”





## “THE FOG IN GTFO IS SO MUCH MORE THAN JUST A VISION LIMITER, IT’S A MOOD SETTER, RIGHT?”

example. “Where things that are far away render at reduced detail – it’s quite trivial to use that system as a graphics feature, which is what we did for geometry. If it’s lower then we force the lower [detail] ones, if it’s higher than we turn on the higher ones all the time, or if there’s particularly attractive visuals in a cutscene, I think we added a setting where you can use cutscene models for the main characters in the rest of the game.”

Lab42 added a few computing-intensive options for beefier systems, such as supersampling anti-aliasing, which renders graphics at a higher resolution than your screen, then squashes them down to smooth out edges. But Lab42 was also keen to support older computers by, for instance, accommodating processors that don’t support the latest SSEs or Streaming SIMD Extensions

(essentially, instructions for how your PC thinks). “We went in and rewrote everything to work with the second set of instructions, implementing all of the stuff from the third set in the second set, so that it launched on all the machines – that was important to us, because we wanted to let everybody run it.”

### MINIMUM’S THE WORD

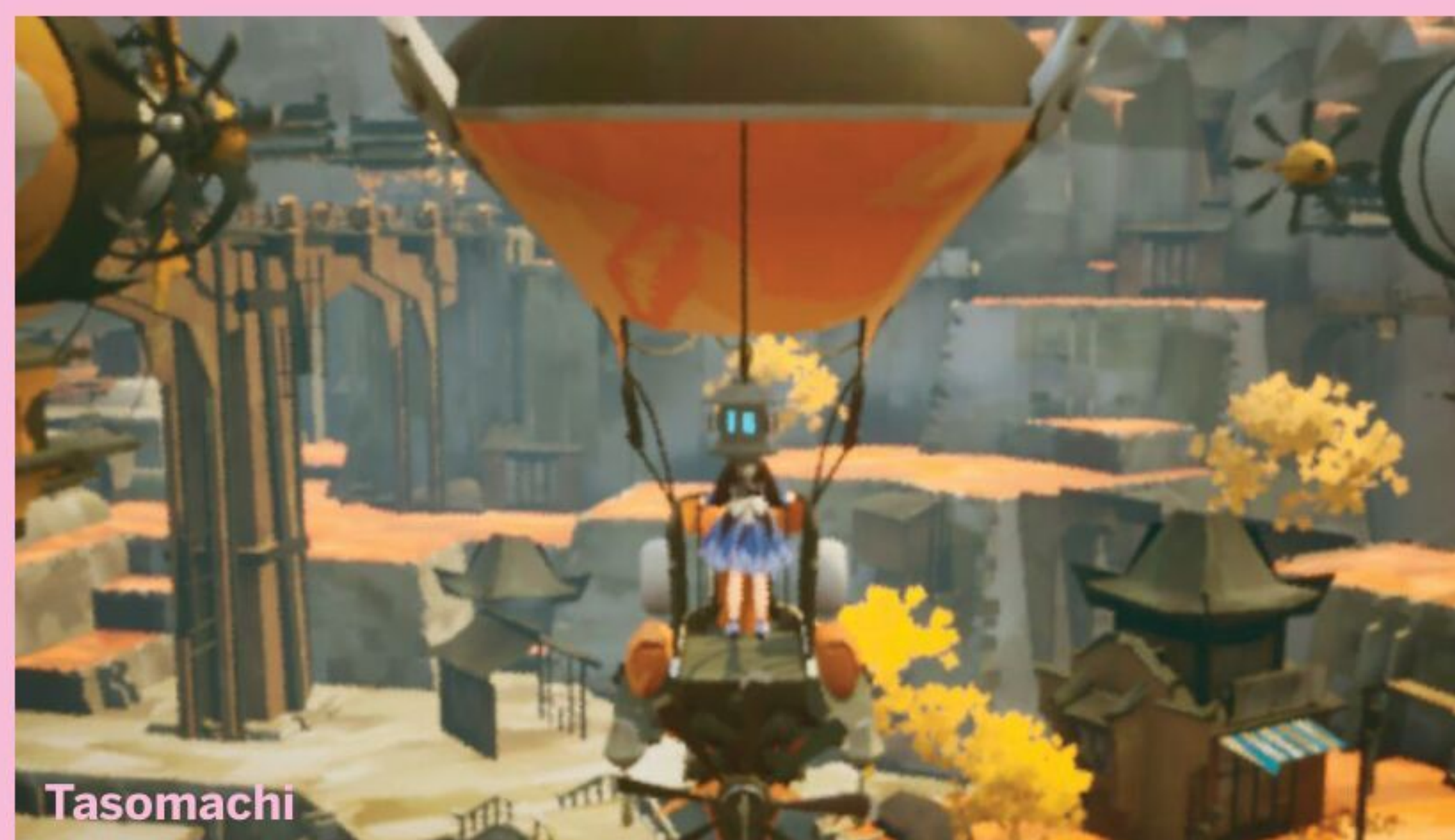
The intricacy of solutions like these reveals that optimising a game to work on older or cheaper PCs isn’t just about selling to a larger audience. There’s a playfulness to it, with different settings giving rise to different aesthetics within the game’s overall direction. It’s not just about making compromises, but

experimenting with the look, sound and feel of the simulation.

To design for lower specifications can, moreover, be an exercise in time travel. “Talking about SSAA in *Yakuza*, we did enjoy that you could really crunch down the resolution, but keep the UI sharp, so it looked like a PS1 game or whatever,” Goodwin says. “Stuff like that was fun to do.” *GTFO*, similarly, resembles a totally different game when you drop the resolution and peel off the UI. “I really enjoy that you can do that – hide the UI, go down to 720p or below, and get this old-style *Quake* feeling,” Vikström enthuses. This is, of course, especially the case for games that openly try to bridge old and new in their narrative or visual concept, such as Trigger Happy Entertainment’s forthcoming *Turbo Overkill* (see p40), which blends a flashy cyberpunk setting with the chunky pixels of classic *Doom*.

The usual conflict between features and performance aside, *Turbo Overkill* is a tug of war between different eras of videogame graphics. “When I first started the project, I made a list of rules that I should follow,” says lead developer and *Doom* modder Sam Prebble. “Like, you can’t use any technology like shaders, or reflections, advanced lighting methods, that were invented after the year 2000. I would try to avoid putting those into the game [...] but eventually I got to a point where I just didn’t like the way it looks. If I want a neon-drenched cyberpunk city where it’s always raining, you have to have reflective surfaces, there’s no way around it – well, there probably are ways, but everything I tried wasn’t very pleasing to look at.”

RIGHT: Shadows are often the first thing to go at lower specs.







## “YOU DON’T EVEN HAVE TO MAKE REDUCED POLYGON VERSIONS OF THINGS ANY MORE”

» “So I kind of just stumbled into slowly adding more modern rendering techniques, and I just got to a point where I said, ‘OK, screw it. I’ll just throw it all in, but try and ground it in a retro look, or I guess it’s kind of cringy, but ‘retro plus’, to find a nice balance of modern and old technology.” Prebble has spent the best part of a decade picking which assets to update. “It’s like, this headset doesn’t look too great. I could go back and bring it up to scratch, but I don’t want to polish it too much and detract from the original look of the game.”

### KILL SWITCH

One ironic outcome is that *Overkill* currently requires quite a ‘hefty’ PC. But it does accommodate players who want to excise the modern flourishes and experience something like Prebble’s original, heavily

**TOP:** Those lowered settings are often more noticeable in motion than in screenshots, but on the whole we were impressed with how well a lot of games hold up.

rule-bound retro prototype. “I have seen a lot of people run the demo on low settings, and some people look at that and say it’s a retro game, it’s supposed to look chunky. I kind of agree with that. Originally *Turbo Overkill* had a pixelation filter in it, which is something I used to play with all the time, just because I liked the look of, you know, low resolution graphics.”

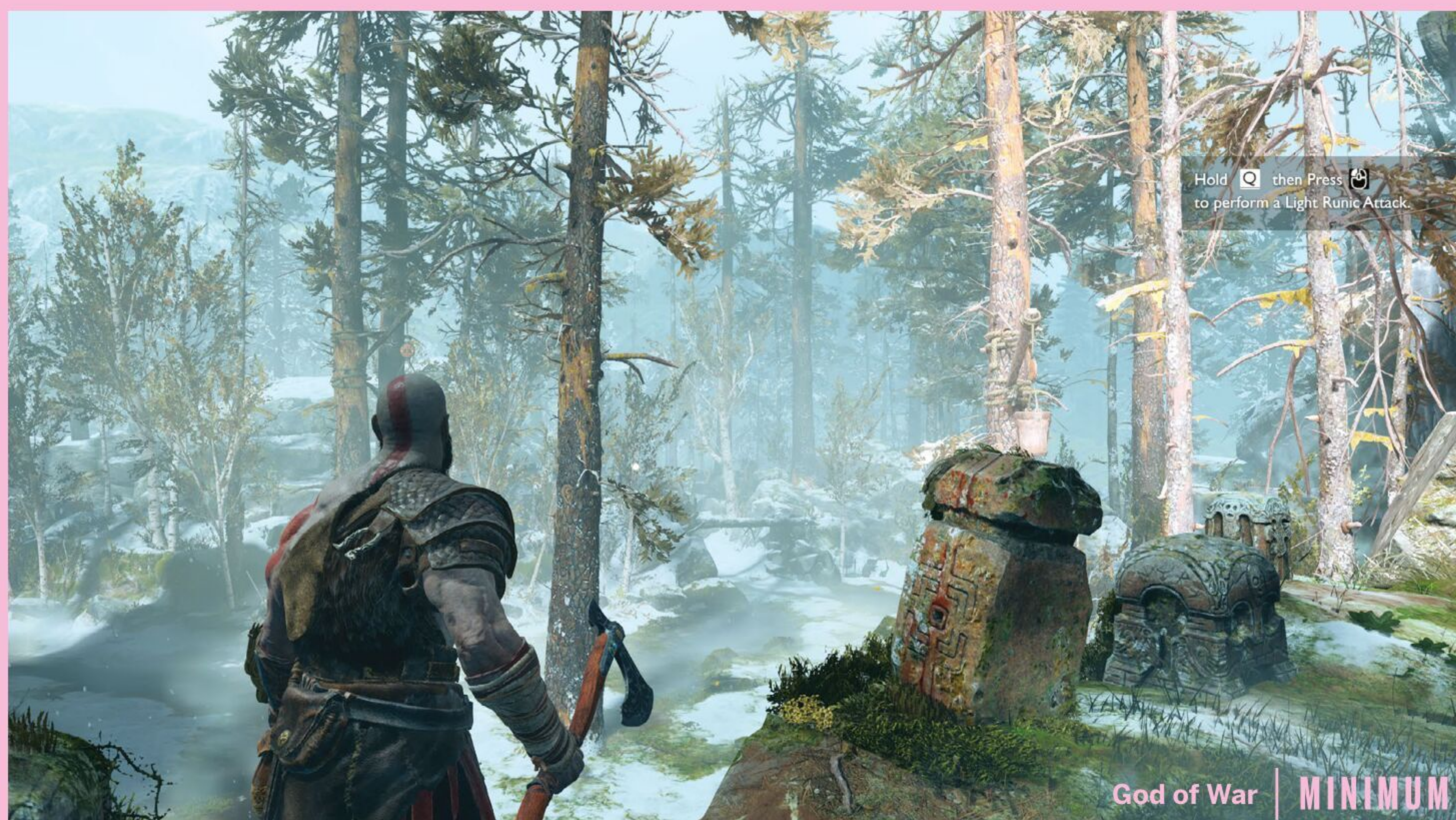
Prebble is considering a lo-fi version for ‘potato PCs’, following on from the lo-fi options he made for his *Doom* mod *Total Chaos*, which “basically downgraded all the textures and stripped out a lot of shaders and all our models had half the polygons. That’s something I’d love to do for *Turbo*, but it would only be later in development”.

### BOXED OFF

There are parallels between low-spec gaming and demaking, the practice of remaking a game to run or look as if it’s running on old hardware. They’re arguably the same thing – demaking redefines developing for lower specs as an art form deserving celebration. Having spent decades wrestling various technologies into submission, Goddard is both fascinated and repelled by the thought of adapting new games to platforms such as Gameboy. “To me it just sounds like hitting my head with a hammer non-stop. That doesn’t seem to be anything enjoyable there from my point of view, but because [younger developers haven’t] gone through all that pain they don’t see it – they find it fascinating and really intriguing.”







Goddard argues that for larger established teams, the question of high or low spec may become irrelevant in a few years thanks to technologies that automatically adjust for different hardware capabilities. Take Unreal Engine 5's geometry system Nanite. "Basically, you throw as many polygons as you want at it, and it just figures it all out. Up until now all the games I've ever made [have been] a constant battle for framerate. You're always trying to reduce polygons. With UE5 now you don't even think about it. You don't even have to make reduced polygon versions of things any more. Everything's automatic."

Features like these could transform the industry, he says, much like the spread of intuitive

middleware tools such as Unity. "It's getting to the point where it's no longer a programmer job worrying about framerate. It's basically artists buying assets from a store and throwing them in without even worrying about texturing or LOD or anything like that. Three million polygons, ten million polygons, whatever, just throw it in and it just works on any hardware. So that's the kind of end goal of all this fighting over settings – it's all just handled within this black box here."

This certainly sounds like it would remove much of the stress from projects like *GTFO* and *Turbo Overkill*. But from a player perspective, it's energising and inspiring to be given more direct control over how a game looks and



## AAA TO B

Three developers offer thoughts on trends in blockbuster game visuals



**GILES GODDARD,  
CO-FOUNDER,  
CHUHAI LABS**

"It's interesting to see what will happen with 8k and ray-traced graphics, because I think we've hit the limit for resolution with 8k. [With real-time ray tracing] it's going to be less about turning settings off and on [because] it renders the world as in real life. It's very hard to turn things on and off with ray tracing."



**TERRY GOODWIN,  
TECHNICAL  
DIRECTOR,  
LAB42 GAMES**

"People are always saying, how can they possibly get better than this? I think there will always be new ways of representing some facet of reality that you didn't realise was missing until it's put in a game. And everything looked really great before then, you just didn't really notice."



**ALEXANDER MURPHY,  
PRODUCER,  
VIRTUOS PARIS**

"I think the focus will be on small details. Is your fox made of four polygons with one animation, or will it be a fully scanned animal with multiple animations? I think we'll see more games using unique art styles to stand out. Games like *BioShock* and *Dishonored* have 'realistic' art styles but with their own twists."

**LEFT:** *Wonderlands* has a huge spectrum of graphics settings. At the lowest, most background NPCs are removed to improve performance.

runs. And as Vikström concludes, planning out a game so as to accommodate lower specs is a source of creative satisfaction. "You have expert programmers, expert artists, expert sound designers and storytellers, and they're all working together as tightly as they can. That's one of my favourite things about game development – these really varied talents that need to work together. And also, the big challenge." ■



# EXTRA+LIFE

CONTINUED ADVENTURES IN GAMING

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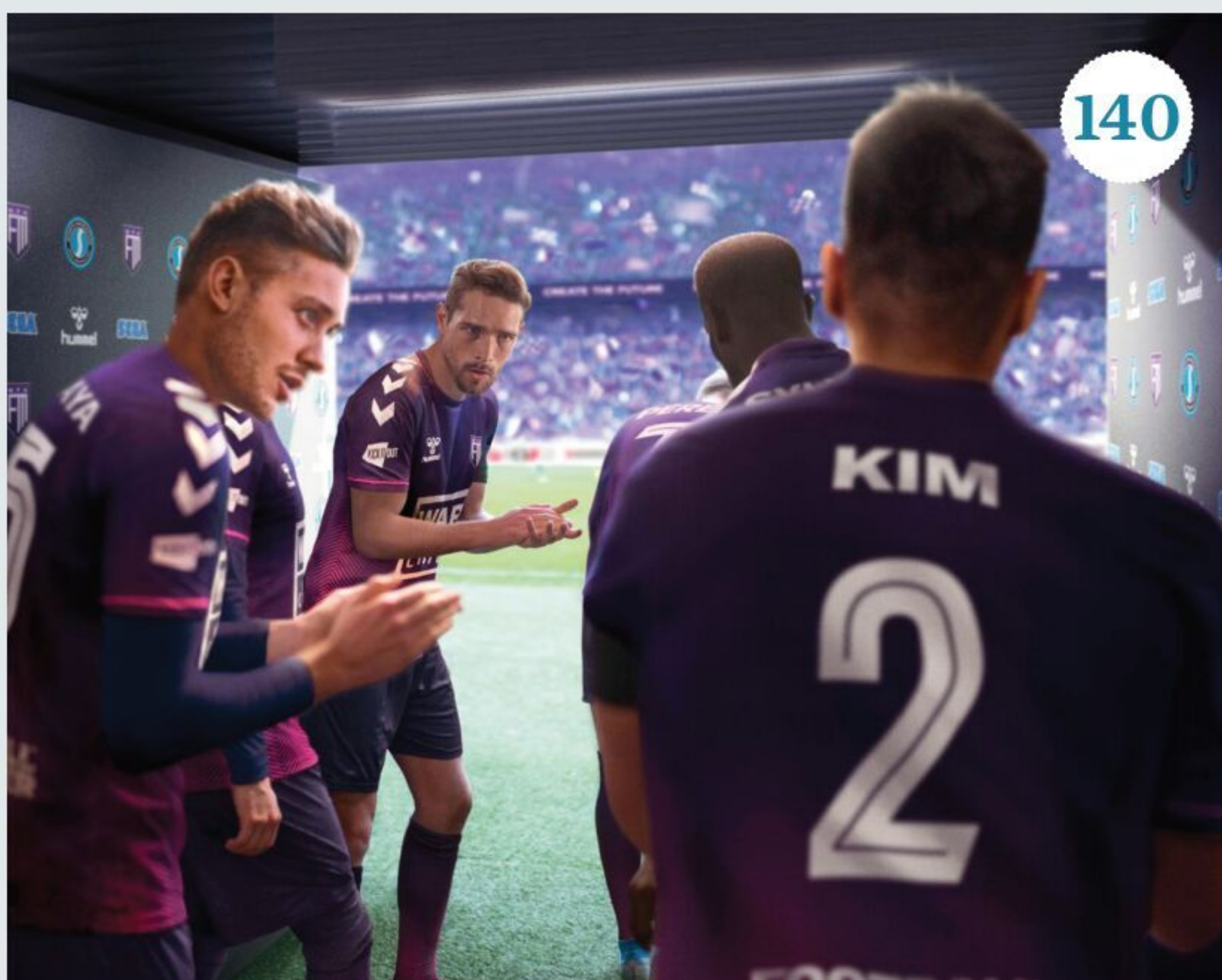
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## DIARY

PERSONAL ADVENTURES IN GAMES

# KILLING EVERYONE IN HITMAN

Stealth be damned.

*By Matt Killeen*



**I**'m a *Hitman* purist. The ideal playthrough involves a few people getting food poisoning and passing out, before there's a terrible accident where someone nasty dies in an ironic way.

Less a murder-simulator, than a death-by-misadventure-simulator. I think it's why the two movie adaptations leave me cold. If I was directing, it'd be all choking on vol-au-vents and you wouldn't see Agent 47 at all. But when my daughter plays, she embraces the film aesthetic. She goes in shooting... become death, destroyer of worlds.

While the body count is impressive, it's not what you'd call efficient. There's a real ammo issue, and often the target flees once the big guns come out. However, while I usually restart after the automatic weapons kick-in, I wondered if it was possible to hit all the targets and then, wipe everyone out. *Hitman* is a passable shooter and with pacifist playthroughs all the rage, I'm pulling a 180. Everyone is going to die. All people.

I also wondered about the notion of innocence in the game. If you're a soldier of a corrupt regime, you're fair game really, especially if you get in the way. Maybe security guards are too, on that basis. But if you're a guest at the party of someone who can at best be described as evil? By your friends may you be known, I suppose. What if you're just setting up the sound-system? This complexity makes precise rules woolly or unfair, and I'm leaning on the latter.

Rule One tends to preclude going in all guns blazing. Rule Two is where it promises to get complicated. I'm also cheating slightly and doing the first season of *Hitman*, as this has the locations I know best. I'm going to abuse the automatic weapons I've earned and never used in a normal playthrough. Rule Three is about looking like an angel... an angel of death.

Paris's The Showstopper is the *Hitman* level I know best of all, having played it endlessly, waiting for the next episode to unlock. It's a beautiful, immersive simulation, that is a honeycomb of stacked puzzles. The armed intervention, which I'm calling The IAGO Farrago, threatens to fracture this delicate balance, and as such it's a proof of concept.

## THE RULES

1. All targets must be eliminated and tasks completed.

2. All police, military, security, employees, and contractors must die, plus guests. Everyone, basically.

3. All in the Requiem Suit... because style matters.

There are plenty of horrible people upstairs at IAGO's auction of state secrets, while Dalia Margolis and Viktor Novikov's actions cost innocent lives. Screw them, they're all going down with the goons. Then there are the employees, but they should probably know better, and finally, there are the guests. I'm making the call that they're all awful people, which they seem to be if you listen in on their conversations for any time at all.

## "J'FAIS DES TROUS..."

Full-frontal assaults in all those crowded, open halls proves suicidal so I'm driven to experiment, with healthy doses of sneaking and drainpipes as usual, but leaving a

## FULL-FRONTAL ASSAULTS IN ALL THOSE CROWDED, OPEN HALLS PROVES SUICIDAL

trail of dead, which is new to me. I find myself trying to hide bodies out of habit and being rumbled, when the best bet is just headshot everyone who might see the body. Whittling down the armed guards by constant flanking through different rooms, picking up new weapons as you go, is the strategy that works best. Every time they send someone to fill body bags, I just make more work for them. Eventually it's just me and my quarry.

So, I turn to the auction guests. I work through them, pleased by the dropped IAGO invites that tell me I've nailed another monster.

It was here that things take a turn that I wasn't expecting. It's one thing being Leon the Professional and cutting a swathe through goons and monsters like a slow-moving ghost, leaving the fallen behind you like an arrow for the foolish to follow. It turns out, it's quite another gunning down a stream of pleading, crying waiters and models. I begin to find it difficult, even upsetting. I try hardening my heart. "You're all terrible people, neck deep in corruption and exploitation, with horrible dress sense," I cry. But a little voice inside me wails back, "Should not these wayward souls be given a shot at redemption? Are they not people too? If you prick them, do they not bleed?"

Well, yes, but that blood is just lines of code, just as they are. They aren't real. This is a video game. But my buzz has been totally harshed. Thanks a lot conscience.

It takes another hour to complete the wholesale and complete slaughter of every single NPC, and find Victor in the safe room where I started. I wanted it to feel like a triumph, and it was definitely a thing, but I just feel drained.

This means that by the time I reached the sunlit Amalfi Coast for The Mansion Fumigation I'm already conflicted. I declare everyone in the mansion and lab as the enemy, deciding to deal with the rest of the town later. I spurn the tempting thought of doing the whole thing as the Plague Doctor and start



Suit and Chrome  
by ICA. RS-15,  
model's own.





## BODYCOUNTDOWN

## Who's Top of the Popped Off?



Down at **#5**, it's Sapienza with 'Just the Mansion'



Hakkaïdo are in at **#4** with 'Everyone in a Small Map'



Holding at **#3** is 'No Civilians' By Marrakesh



New at **#2**, it's Bangkok with 'Don't Be Our Guest'



At **#1**, it's Paris with 'Every Living Soul Extinguished'

» with the lab. I've a bioweapon and its creators to destroy, otherwise I can't go home.

I complete the original mission in under ten minutes. I've nailed the combat now, and just walk round and round the mansion killing as I go, silently, like the Grim Reaper in a white suit. It's exhilarating, but amongst all the macho nonsense and comments about my clothes that the guards bellow in inappropriate accents, I hear, "Ours is not to reason why!" Do the goons need to work themselves up? Are they assuming death and having second thoughts? Surely, some reluctance must be creeping in now there's a pile of bodies in the hall so tall that they have to walk round it? I am overthinking this.

## QUALITY OF MERCY

And again, it's the unarmed employees that make me feel queasy. So much so, that as I emerge into the sunlight and walk towards the gates to continue the reign of terror, I pause at the brink. Behind me is a charnel house. Blood is trickling past me towards the town square, where people are resting, drinking coffee, and sunning themselves. It's beautiful. Believable. And I can't do it. There's no rationale I can apply to the process that makes sense in-game. The massacre thus far is a message for bad people. The spree killing of a whole town would obscure it. Meanwhile, back in the real-world, I don't want to do it.

I drop the rifle, holster my ICA chrome and step into the square. There I find Rocco's sister, the mansion employee, still calling up to wake her shiftless brother. He can't be bothered to go to his job in the kitchens – and I'm supposed to steal his chef's whites – but she wants him to

make something of his life. She's missed everything. I let her go, the one and only survivor of the vengeance that Ether had brought upon her place of work.

On the one hand, A Guided Cage (or in this form The Legation Negation) seems to offer some clearer moral choices. The corrupt army, the scheming general, and white-collar master-thief Strandberg are all malevolent, and the Swedes are harbouring a criminal on a technicality. So, I clear out the consulate and the old school, but the population have seen me kill a lot of soldiers by now, and they're anxious to let everyone know about it. As I move through the market that becomes irritating and, flippantly, I turn an assault rifle on the crowd. What follows is truly distressing. It's a well-rendered window onto hell. Too real. I quit out, load up an autosave, carry out the plan and leave.

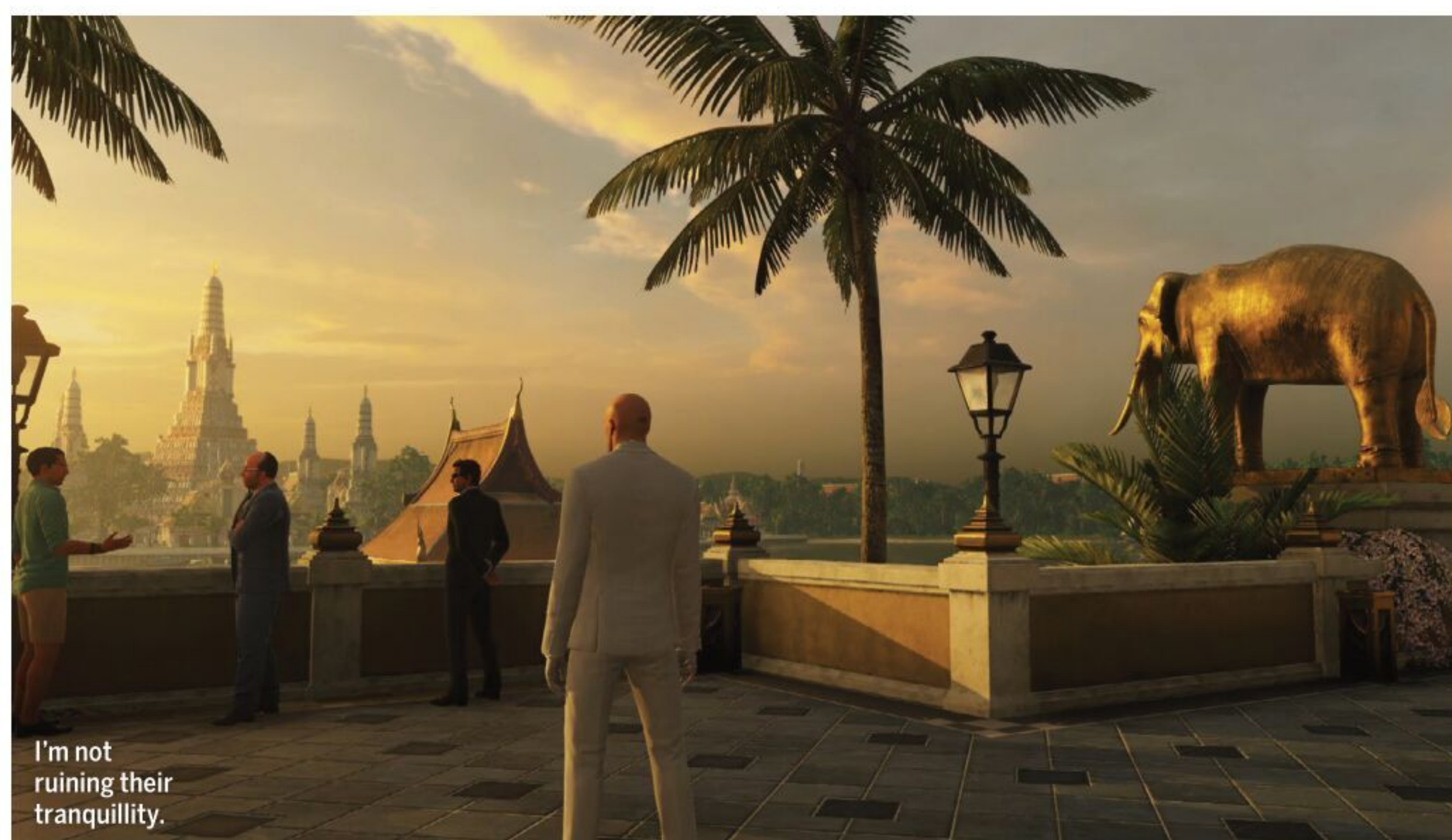
I wonder at myself, playing a game and simply refusing to do what I'd said I would do, again. I tell myself the next level will be different.

Club 27 in Bangkok offers me some respite. Yes, the murdering rockstar, his bottom-feeding lawyer, and their friends are fair game, but how to approach a hotel full of other guests and staff? Not being as familiar with the destination as the other levels, I walk around to reacquaint myself. As I do I listen to the guests talk... and realise they are all terrible, terrible people. They are dismissive or patronising about the country, affecting boredom with it, and rude about the staff. They are bored, rich and entitled idiots. So, all the guests die. Round and round I circle the hotel and its corridors and gardens, wiping out the security. The staff get to go home. The

Guest Eradication. I am fine with all that, apparently.

## JAPANESE HOSPITALITY

By the time I reach the Japanese hospital of dubious morals for the super-rich, I am tired and grumpy. And armed. I don't care who the targets are, but it's something about involuntary organ donation. I have zero sympathy for the medical staff, guards, or guests, merely wincing a bit with the cleaners and sushi chefs. I call it The Sod Everyone, or Min'na mechakucha. Am I just desensitised by playing an interactive version of Alan Clarke's Elephant non-stop for days on end? Or is that process making me more discerning somehow? It's easy to see Bangkok's waiters as real people, just getting by, whereas the hospital



I'm not ruining their tranquility.





A good night's work.

## THEY ARE BORED, RICH, AND ENTITLED IDIOTS. SO, ALL THE GUESTS DIE

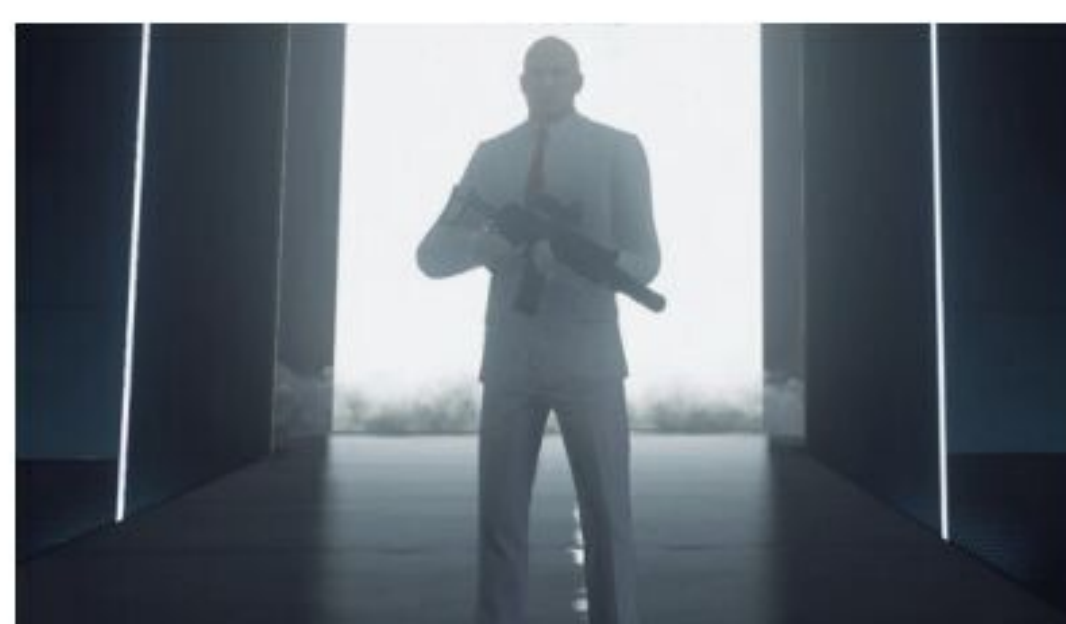
is remote, and its very existence is obnoxious. Why would you work there?

And *oh my god*, what kind of judgemental psychopath have I become, slowly by degrees? This is where *Hitman* is, in fact, a litmus test for your humanity, a moral traffic light, like Tom Waits in *The Fisher King*.

There is a moral dimension baked into the game, but it isn't just in the irredeemable targets or the penalties for non-target kills. There's another level that the laissez-faire attitude to other people's lives comes to highlight. You can target the super-rich as fundamentally unethical, with immoral goals, but the organisation you work for is also corrupt, just another resource for the obscenely wealthy to wield power. Your handler is just yet another sociopath, working through her own grandiose and skewed notions of morality. The Moroccan coup isn't being prevented because that's a good thing, it's just about a defence contract held by a western corporation. 47 can talk about a "just hit" but he's kidding himself. He's a monster too, as ghastly as those

targets. He isn't even doing it for the money. He's doing it because it's all he's ever known. It's what he was created to do. And he's YOU. You are doing it.

There's a level on which the game is saying, it isn't OK to like any of this. You are indulging yourself, immersed in self-righteousness. The degree to which you are enjoying it is a little window into the darkest parts of yourself. You are the Shadow Client. Most therapists will tell you that this is a healthy thing, it's called owning your own shadow. But therapy is hard and upsetting, and sometimes you don't know what to do with what you've found out. In my case, it's that this game isn't meant to be played like this. Attempting to kill everyone has left me wanting to kill no one, in a game all about killing people. Maybe that's the point? Anyway, that's *Hitman* ruined. Thanks a lot, conscience. ■



Almost exactly when this stopped being fun.





DIARY

PERSONAL ADVENTURES IN GAMES

# THE IRON FIST WEARS AN IRON GLOVE IN AGE OF EMPIRES IV

PART I

Can a sledgehammer crack a nut? There's only one way to find out. *By Ian Evenden*



## THE RULES

1. Make massed attacks only.
2. Siege engines: yes please.
3. Leave the enemy a smoking ruin.

**W**ho bought PC Gamer issue 13? Hands up. The longer-lived among readers might remember the *Warcraft: Orcs and Humans* demo contained on one of its cover floppies. After two scenarios of jolly orc-bashing lifted from the game, the third and final (if I remember correctly, which it's possible I don't) level of the demo was a custom scenario (I hope) that gave you a human village surrounded by a ring of orcs, who would merrily chop their way through your tiny population and all its huts.

It was an unwinnable scenario, a Kobayashi Maru that, instead of teaching important lessons about not violating treaties and allowing examiners to observe how a commander reacts, merely demonstrates that any village or population is vulnerable to overwhelming force.

Which brings us to *Age of Empires*. I played a lot of this while pretending to study at university in the late 1990s, right in the middle of the RTS boom kicked off by *Warcraft* vs *Command & Conquer*. I've still got the books on Michel Foucault if anyone wants an essay, but I've also retained a weird preference for a custom skirmish game on *Age of Empires II*'s Narrows map. The beauty of Narrows is that enemy scouts won't cross the deeper bits of water, so instead of building a wall around yourself you only need to place gates in strategically chosen places to seal off a surprisingly large area. Once your army is complete – a mailed fist composed of longbowmen, men at arms, and lots and lots of trebuchets – you open a gate and march out to destroy the AI's city.

It doesn't work so well against human opponents, admittedly, but it's a tactic that finds itself played out again and again in tank rushes across multiple RTSes. The one series it's not particularly valid for is *Warcraft*, in which the management of small forces takes precedence over the application of overwhelming numbers. So we take to the battlefields of *Age of Empires IV* to discover whether tactics more suited to *Starcraft* can work on a medieval battlefield.

## WALL ABOARD

Full of bravado, or full of something, anyway, I fire up the new game. I haven't played it much at this point but that

doesn't matter, surely? I play through the tutorial with William (it will never get old to hear him cry "Incontinent!" – I am 42 years old) and feel myself getting back into the old swing of things. So I fire up a skirmish game like in the old days. The Narrows map seems to have vanished, but there is one, Confluence, that has a similar feel. With one other AI player on a small map, with standard starting resources beginning in Age I, what could possibly go wrong?

Well, for one thing, my age-old tactic of walling off my area with gates won't work any more because the terrain is much more complex. I have to build a longer palisade wall, hoping to upgrade it later. I pop a watchtower

## WHILE ERECTING THOSE DEFENCES I'VE TRAPPED A RED SCOUT IN MY AREA

behind it, do the same thing on the other river crossing, and get back to building up my forces. I'm the English, in blue, hoping to unleash longbowmen and trebuchets on my enemy, the Holy Roman Empire in red. The English have a really straightforward playstyle, and get men at arms early on in the game, so hopefully they'll be a good choice for both an early military strike and for the defences I intend to erect.

Problem is, while erecting those defences I've inadvertently trapped a red scout in my area. He was busy rounding up sheep but is now unable to escape, and as I've only built a wall instead of a gate, I can't let him out. Want to know how to drive an *Age of Empires* AI opponent into a rage? This is how. The blocked river crossing to the west of my settlement suddenly becomes the front line in all-out war – two horsemen, at least four men at arms, and some prelates come charging out of the woods, take down the fence, destroy the watchtower, and begin sacking my gold-mining operation. I drive them off with scouts and longbowmen, but they're soon back, and in greater numbers.

To cut an embarrassing story short, the Holy Roman Empire leaves me with a single longbowman before

running back through the gap in the wall, and I don't have enough food reserves to create more villagers because the Ottonians stole all the sheep. Quit game.

It has become clear that this is not going to be an easy challenge, and may require actual hard work, thought and planning, three things I'm not used to applying.

My first mistake was in choosing the pope-botherers as my opponents. They're a highly militaristic bunch when not rounding up sheep, and are good at both attack and defence. Their prelate support units are available right from the start, and can both heal units and inspire them, which ups their damage by 15% and gives them more armour. They actually sound like a great choice for my overwhelming force doctrine.

**BELOW:** An English village. Quiet, peaceful, serene.







## I CAN SIEGE FOR MILES AND MILES

*Know your siege engines*



### TREBUCHET

A massive beam with something nasty on the end, hauled back by manpower then sent flying skyward by a counterweight.



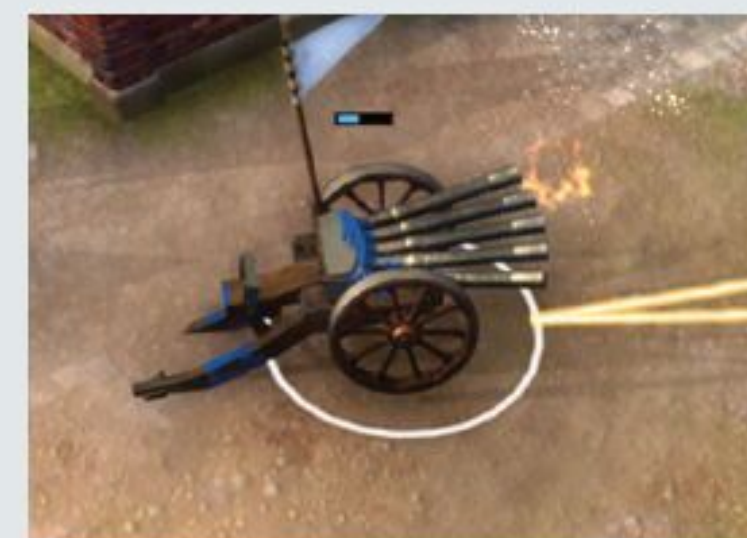
### CANNON

Cheating, in some people's opinion. A long tube with gunpowder at one end, some sort of projectile, and a bad attitude.



### NEST OF BEES

Replaces the mangonel in Chinese arsenals. This is firework-shotgun useful against massed troops and, it seems, trebuchets.



### RIBAULDEQUIN

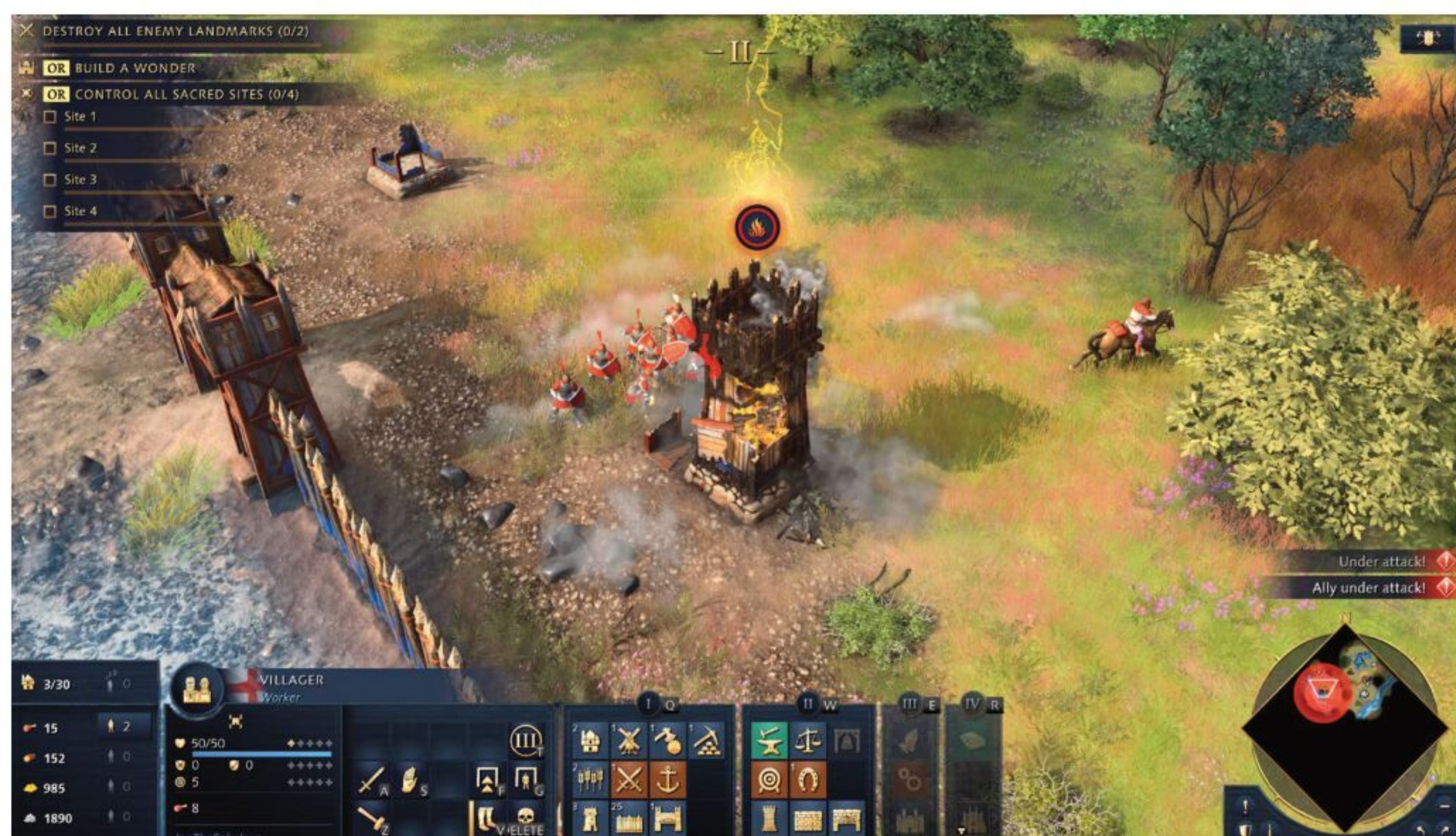
Despite being difficult to spell, this useful five-barrelled gun can cut down ranks of infantry, but falls in the face of fire arrows.

My second was in the choice of map – it was too small, forcing us to clash too early before the overwhelming force could be built up. Back to the title screen. What I need is a civilisation suited to early aggression, and that means fast production. The Mongols look like a good choice, with their unpredictable mobility, oovoos for automatic mining, and generally being a perfect fit for a hit-and-run strategy, but a bit of an acquired taste. Then there's the French, another straightforward faction that has strong military units and the ability to produce cavalry and archers faster if I lay my town out properly. The French look good.

### SIEGE MENTALITY

Skirmish maps can have any of three victory conditions: either you destroy all enemy landmarks, build yourself a Wonder and successfully defend it, or take control of all the map's sacred sites. This last one involves plonking a religious unit on an eerie ruin and leaving it there for ten minutes, hoping an enemy military unit doesn't come along to ruin the bread and fish. Unfortunately this doesn't work within the rules I've set for myself. The defensive option doesn't chime with the doctrine of force either, though a forceful defence of a wonder against all comers might be interesting, especially if it comes down to a valiant last stand by a few knights and archers.

**BELOW:** To add insult to injury, the Holy Roman Empire burns my watchtowers after breaching my wall.



But really, what I need to do is to sally forth and burn my opponent's civilisation to the ground. This time the map is Mongolian Heights, it is tiny, and I am the French. The sacred site win condition is turned off, my opponents are the Chinese, and we're starting in Age IV with high resources. This is totally going to be my game.

It starts well, I send my scout rounding up sheep, immediately have a villager building walls to keep out the enemy scouts while rounding up sheep myself. I build an archery range, barracks and stables before running out of resources and having to concentrate on early game stuff like houses and lumber camps for a while. This means I'm completely unprepared when a bunch of Chinese horsemen pitch up and begin slaughtering all my sheep before rampaging unopposed through my town because I'd forgotten to create any troops. Restart.

This time, I'm ready for them. I don't worry about the walls, as I know Chinese scouts will be after my sheep anyway and I don't want to accidentally trap one. I get straight on with building a keep which will speed up military production. My opponent tries exactly the same tactic as last time, sending an early expeditionary force into my village to cause damage. Thankfully, a mixed defence of mounted knights and hand-cannoneers slaughters the lot of them, though the game quickly gets obsessed with telling me to build a lumber camp even though the trees are in easy walking distance of the town centre. I build one just to shut it up.

Production has slowed as all my villagers have been assigned to tree-cutting, so I spread them out between the four resources, and as the numbers begin to rise I fend off a few more exploratory attacks by Chinese archers. They're coming over in dribs and drabs, suggesting my opponent doesn't have an overwhelming force doctrine in play. Then, something wonderful happens.

### HIT AND MISS

I have enough gold to build a trebuchet. I set it up on the outskirts of the village just to see how magnificent it is – and just at that moment an enemy scout comes along. I send all my forces after it,





## I LOCATE AN ENEMY BUILDING AND OPEN FIRE WITH THE MAGNIFICENT TREBUCHET

and the trebuchet takes a shot. It misses – the item description is quite clear about it being inaccurate against moving targets – but it's a wonderful moment, and fills me with confidence about taking out the enemy HQ.

So I send my troops across the river. An enemy scout harries us, but he's very easily swatted away. I locate an enemy building and open fire with the magnificent trebuchet. I catch a glimpse of what might be a cannon retreating, and take down the barracks before sending my troops in. The enemy keep and watchtower slaughter them all, and my trebuchet is left alone, flinging stones at buildings on the edge of its range. It can't survive for long like this, and I don't have enough resources at home to produce more than a few spearmen.

If this was *Age of Empires I* I'd be summoning nuke troopers right now, or possibly a baby on a tricycle with a shotgun. They really knew how to reward cheat codes in the 90s. *Age IV* doesn't have cheats, yet, and that glimpse of a cannon is really worrying me. Chinese engineering eventually does for my trebuchet, taken down in seconds by fire arrows and a sort of firework launcher called the Nest of Bees, one of the Chinese unique units.

Then they come for my village. More of the firework launchers, three cannon, and many, many fire-arrow archers. I'd been upgrading my keep with defensive weapons, just in case, but they count for nothing if the enemy can stand-off and bombard you. The mangonels I was stockpiling for another attack go down easy, my villagers get set on fire despite valiantly fighting back with their bows, and before I know it my blacksmith is on fire and they're closing in on the town centre. Their attack on me is exactly how I envisaged the iron fist of ultimate force would be. Forlornly, I build a ribauldequin – a type of five-barrelled gun – before my siege workshop succumbs, and go down fighting. ■

**ABOVE:** The hand-cannoneers appear to fire from telescopes under their arms, but they're very effective.

**LOWER LEFT:** This skirmish in the berry bushes is my greatest victory of this campaign.







**TOP:** Add new sorceries with some stellar effects.

**RIGHT:** Who doesn't love a parade?





Photo mode lets you get up close and make new friends.

# ELDEN RING

Praise the mod. *By Christopher Livingston*

**E**lden Ring is huge, and I'm not just talking about the size of its map. The open world action RPG is a massive hit, not only selling millions of copies but launching to near universal critical acclaim. We love it, and pretty much everyone else does, too. It's a fantastic and challenging game set in a mysterious open world.

But just because a game is a widely beloved masterpiece doesn't mean there isn't room to tinker with it a bit. Immediately after its release in February, mods for *Elden Ring* started popping up – at first it was mostly reshades, post-processing injectors to subtly change the visual tone of the game, but it wasn't long before bigger and more complicated mods started arriving to adjust the difficulty (in both directions), add new weapons, clothing, armour, and other items, change the HUD, overhaul the magic system, and more.

One of the best mods for *Elden Ring* adds something lots of players were clamouring for: a photo mode. The Lands Between is a vast, beautiful world filled with stunning sights and bizarre creatures, and it's hard to take it all in while fighting for your life or galloping around at breakneck speed. Not to mention the impossibility of getting one of the intricately designed bosses to stand still long enough to grab a selfie or two before it pounds you to dust.

## SAY CHEESE

The *Elden Ring Photomode* mod, created by Frans 'Otis.Inf' Bouma, is perfect for any Tarnished that's looking to moonlight as a wildlife photographer. When the mod is activated you can play the game just as you normally would, but a simple keystroke will switch on camera

## NEED TO KNOW

RELEASE  
Feb 24, 2022

DEVELOPER  
FromSoftware

PUBLISHER  
Bandai Namco

LINK  
[bit.ly/3tXEKts](https://bit.ly/3tXEKts)

mode. Controls let you zoom way, way out until your character is just a tiny figure on the screen, perfect for capturing dramatic vistas and highlighting the vastness of the Lands Between. Another key can completely hide the UI so there's nothing on the screen but the gorgeous visuals. You

## A SIMPLE KEYSTROKE WILL SWITCH ON CAMERA MODE

can set up camera paths to shoot some dramatic video along with your photos, use a timestop feature to pause everything while you fly your camera around or set up a shot, and there are lots of other features to create postcard-esque photos of the game, perfect for some desktop backgrounds so you can stare at *Elden Ring* even when you're not playing it.

My favourite feature of the photo mode is a tickbox that makes enemies ignore you. Your character is still on screen but to enemy eyes you are completely invisible. That means you can run right up to any enemy or boss and take the perfect selfie without them going ham on you. Not only does that make for some fantastic photo ops, but you can safely wander and explore the world with no fear of sudden death, and you can really examine and appreciate the finer details and animations of the creatures that are usually trying to kill you.

## MAD WORLD

Other wide, weird worlds you should visit



### BIOMUTANT

An apocalyptic kung-fu fable featuring a bipedal mutant cat that can summon a ball of mucus.



### SERIOUS SAM 4

Visiting Russia, Italy, and France sounds like a great vacation. Except for all the freaky aliens.



### SAINTS ROW 4

Kill people with sex toys, Inflato-Rays, and weaponised guitar cases.



### WEST OF LOATHING

Evil cows, ghost pickles, and a meat-based economy. The west was never this wild.



>> I had a strangely enjoyable time in *Elden Ring* just acting like I was a citizen of the world. I picked up a torch and followed along behind one of those zombie processions. I wandered around the swamp and looked at those horrifying crabs up close. I spent some time in Caelid watching those giant crows pecking at corpses and poking my head into caves without being eviscerated by whatever was hiding inside. I rode my horse right alongside the imposing Tree Sentinel, acting like I was a Junior Sentinel in training. Clearly this isn't the way you're meant to play *Elden Ring*, but it's a wonderful chance to appreciate the dark beauty of the world and its inhabitants without anyone having to die an inglorious death.

### TAKE IT EASY

Being invisible to enemy eyes is about the easiest mode you could ask for, but there is a legitimate easy mode mod if you're finding *Elden Ring* a bit too difficult for your tastes. The mod is called, aptly enough, *Easy Mode for Elden Ring*, created by modder odashikonbu, and it has several different difficulty options to choose from depending on what you're looking for. The first version is simple enough: it reduces enemy attack damage by 50%, and makes your own attacks 25% more deadly. The second version adds a bit more help for struggling Tarnished, using those same damage and attack multipliers while also increasing the amount of runes earned by a factor of ten, and doubling the healing of the Crimson and Cerulean Tears.

And finally, if you really want to remove a lot of the difficulty baked into *Elden Ring*, the third version of the *Easy Mode* mod does even more to swing the odds into your favour. It adds ten to every starting attribute, lets you craft items without needing to gather the required materials, removes the focus point costs for magic and the weight from weapons and armour, and does a lot more to make *Elden Ring* much easier to battle your way through.

Not everyone is looking to make *Elden Ring* easier, though. If you're looking for more of a challenge (I know plenty of players are gluttons for punishment) try the *Prepare to Die (Hard Mode)* mod by Silentverge02, which the modder describes as "extremely difficult but fair". The mod is a revamp of enemy

AI and stats, so it does more than just increase enemy attack damage. The hit points of enemies have a 1.5x multiplier, their stamina is increased by 1.25x, and their senses have been improved. Now enemies will detect you from further away, they'll spend a greater amount of time looking for you, and once they've spotted you they'll chase you for longer distances before giving up. Their hearing has improved a lot as well – if you try creeping up behind someone for an easy backstab, you'll need to be quick about it because they'll hear you when you get right up behind them. Even activities like smashing boxes or other bits of scenery will alert enemies from a good distance away and send them to investigate the noise. Keep quiet, Tarnished!

One of the more startling changes is to the Sites of Grace, which function as fast-travel points in vanilla *Elden Ring*. Say goodbye to most of that convenience – in the mod you can only fast-travel to churches and cathedrals, which means much more traditional travel and more time spent crisscrossing the world with enemies on your tail. But it's not all designed to be punishing, it's also meant to be more realistic. Yes, enemies can see you from further away, but at night, or if you're hidden in darkness, they'll have a harder time spotting you. Bows are now more useful with twice the range as in the vanilla

version, so they're viable choices for ranged combat or good for distractions – if you aim at a wall, the arrow will make a noise when it strikes, which can distract the enemy.

### SPELL CHECK

If you're a magic user in *Elden Ring*, this next mod should be of interest. *Magic Overhaul – Sorceries* by Tellah9 creates some new spells for you to

## MAGMA BURST CREATES A HUGE EXPLOSION OF LAVA

use based on existing spells from the game, giving your staff a whole bunch of exciting new options. Stars of Ruin, for example, lets you send a swarm of projectiles at an enemy, but the mod adds a sorcery called Founding Rain of Stars that creates a dark cloud above the enemy, then rains projectiles down upon them like a targeted storm. A sorcery called Blizzard functions a bit like the vanilla Freezing Mist, creating an icy cyclone at the target's position. If you prefer something hotter, Magma Burst creates a huge explosion of lava that engulfs your opponent.

If you're not looking for major changes to *Elden Ring*, you might still be interested in a few new weapons or skins, and there are plenty of mods that add some. Like, say, maybe just replacing the fearsome Tree Sentinel's horse with Thomas the Tank Engine? In what has become a modding tradition, the storybook train can be imported into *Elden Ring* with the *Tree Sentinel Thomas* mod by skymoon. If that feels like a bit much, how about some new swords? *The Master Sword* mod by MrMorritos3D lets you swing around Link's famous blade from the *Zelda* series, which replaces *Elden Ring*'s usual uchigatana.

To use the mods listed above, keep in mind that you'll have to play *Elden Ring* in offline mode – if the game detects mods it won't let you play online, and there's always the possibility of a ban if you do. A few of the mods require a file that disables *Elden Ring*'s anticheat, too, so tread carefully, backup your game files, read each mod's instructions carefully, and don't ever try to use these mods in online mode. ■

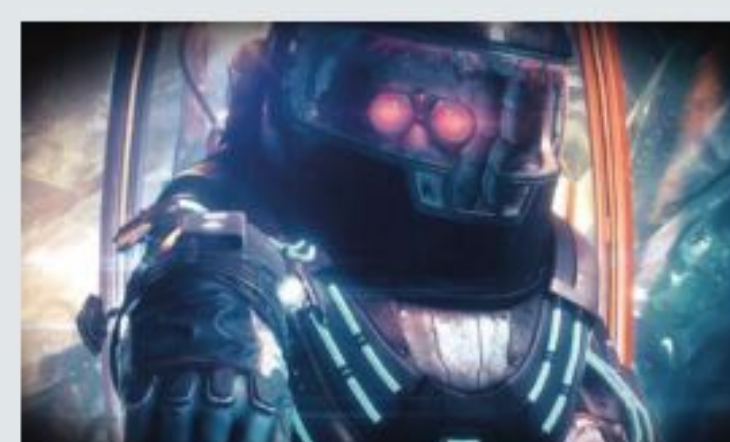
## LIKE A BOSS

### Our favourite scary bosses



#### FALLOUT THE MASTER

The neat thing is, you don't have to fight him. With high charisma you can talk him to death.



#### ARKHAM CITY MR FREEZE

Batman's tricks only work one time each, so Freeze constantly makes you try new strategies.



#### ARTOTIAS DARK SOULS

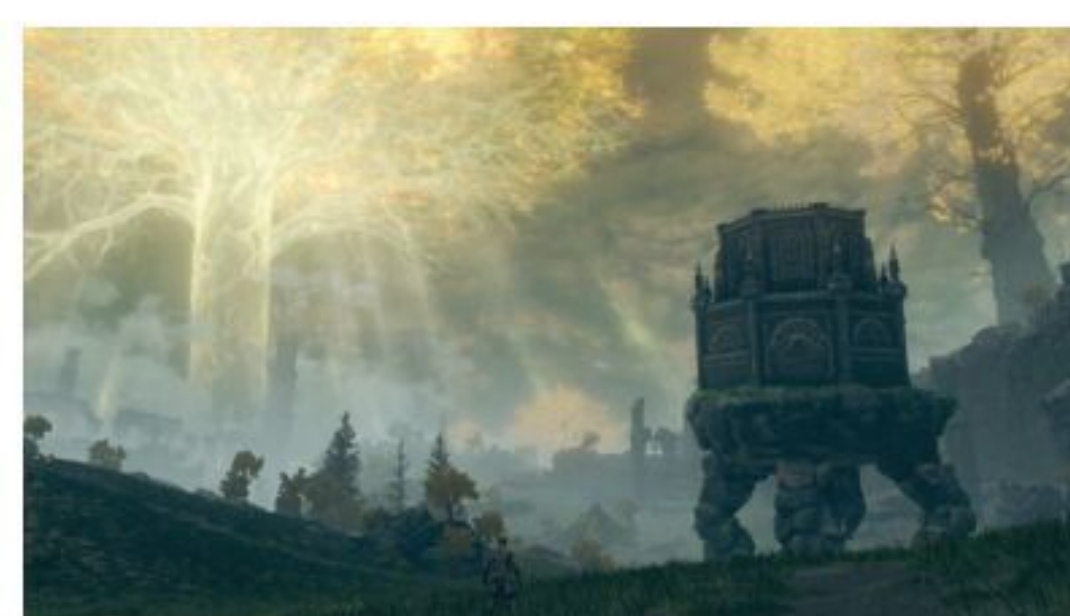
Not the slow, lumbering bosses you're used to. He's fast, nimble, and fights like the player does.



#### DUNGEONS OF DREDMOR MONSTER ZOO

Not sure if a room can be called a boss, but this one comes close.





**ABOVE:** No enemy AI means I can patrol with my pal.

**LEFT:** Zoom out with camera controls. Way, way out.



Selfies with the boss. Always a morale booster.



Aw. Snark. I missed you, little buddy.



**ABOVE:** Valve scrapped this water tentacle monster. I can see why.

**RIGHT:** Hi, need a ride back to Opposing Force? Well hop in, pal!







# HALF-LIFE 2: OVERCHARGED

Supercharge Gordon Freeman. *By Chris Livingston*

**T**he enduring appeal of Gordon Freeman is that he was just this regular guy, you know? He was a mere scientist who, as it turned out, also happened to be extremely skilled at fighting off aliens and blowing away the army and even taking down government assassins. He broke the mould of videogame heroes being career badasses who were already ultraviolent killing machines from the start, letting players imagine that they too, when the chips were down, might have some incredible survival skills rise to the surface too... no matter how nerdy they might be.

That said, it is kind of fun to play through *Half-Life 2* as a total badass in a non-stop action movie. I should know, because I've been doing it with the *Half-Life 2: Overcharged* mod. It turns the dial on *Half-Life 2* all the way up, throwing in tons of new weapons, lots of new enemies, and all sorts of other enhancements.

I didn't read too much about the mod before installing it because I wanted there to be some surprises. And there were. Almost immediately. After the lengthy opening of the game, in which Freeman goes through about 30 or so minutes without even picking up a gun, I finally dashed through the alleys of City 17 and beat my first Combine Cop to death with my crowbar. Then I picked up his gun, shot a second Metrocop, and was surprised to find I could pick up his gun, too. In *Overcharged*, Freeman can dual-wield pistols. Already I feel more like Max Payne than Gordon Freeman.

## NEED TO KNOW

<b>RELEASE</b> November 16, 2004	<b>DEVELOPER</b> Valve
<b>PUBLISHER</b> In-house	<b>LINK</b> <a href="http://half-life.com">half-life.com</a>

That wasn't the only early surprise. While I was running and double-gunning Metrocops, I turned a corner and heard a familiar whoop-whoop sound. It was a Houndeye, those weird yellow

## I TURNED A CORNER AND HEARD A FAMILIAR WHOOP-WHOOP

dog-like monsters from the original *Half-Life*. They were actually meant to be included in *Half-Life 2* at one point, but Valve decided otherwise. The makers of the *Overcharged* mod, on the other hand, figured the more the merrier, and I ran into a whole buncha Houndeyes before I was even out of the city.

## SQUID GAME

Houndeyes aren't the only visitors from other *Half-Life* games present in *Overcharged*. Not by a long shot. Bullsquids, those gross goo-spitting monsters that don't have a lot in common with either bulls or squids? There are plenty of those, too. Remember Pit Drones from *Half-Life: Opposing Force*? Toothy little brown guys with praying mantis arms? I ran into a bunch of them, too. And when I started driving that terrible *Half-Life 2* car along the coast, I

## CHARGE!

Games that could use more guns



### CALL OF JUAREZ: GUNSLINGER

A six-shooter is nice, but why not throw in a gauss cannon?



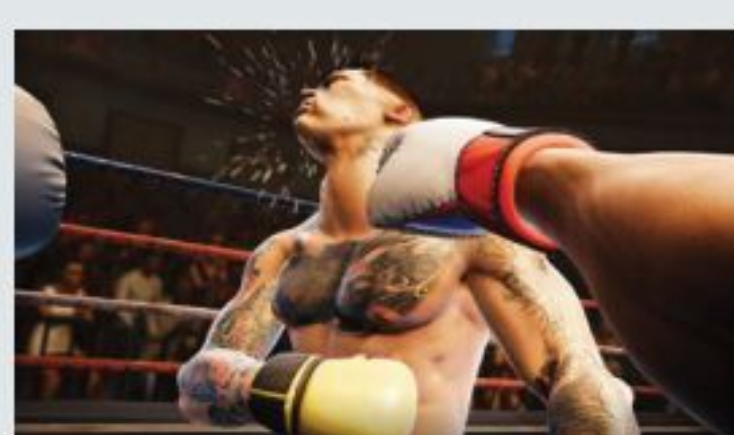
### ELDEN RING

Parrying, blocking, dodging... so much effort when a BFG from *Doom* could end fights quickly.



### STARDEW VALLEY

You can grow sunflowers, so why not grow gunflowers? They're flowers that are... also guns.



### CREED: RISE TO GLORY

These boxing matches would be so much easier if Adonis had a super shotgun.



spotted a bunch of Shock Troopers, those weird bug soldiers also from *Opposing Force*. I guess it's nice Freeman is finally getting to fight them. Why should Adrian Shephard have all the fun?

There are even creatures Valve never put into any *Half-Life* game present in *Overcharged*. A very early *Half-Life 2* trailer showed a bizarre water tentacle impaling a Combine soldier, but that monster (called a Hydra) didn't make it into the game because Valve discovered it wasn't fun to fight. But as I was driving the airboat through the canals, there were several Hydras popping up from the depths and trying to kill me. There were also plans to add an enemy called the Combine Cremator, a ghoulish looking cloaked figure who roamed City 17 using a plasma thrower to dispose of corpses. It's in *Overcharged*. Scared the hell out of me. I was expecting just about anything at that point, but not that.

The Combine soldiers have gotten a few upgrades, too. I wasn't even that far in before I saw one of those Overwatch Elite soldiers, the ones dressed in white with the single glowing red eye. But it was doing a bunch of backflips. This mod basically took a Black Ops agent from the original *Half-Life* and mashed it up with a Combine soldier.

Luckily there's lots of new weapons beyond just dual pistols to deal with these new and old enemies. I'm not sure how many guns I'd collected by the time I finished playing, but there was a pistol with a laser sight – something I definitely would have been happy to have in any *Half-Life 2* playthrough – a proper scoped sniper rifle to compliment my rebar-throwing crossbow, a heavy belt-fed machine gun that I suspect might have come over from *Counter-Strike*, and a quick-firing shotgun that is definitely from *Counter-Strike*.

And there's still more. Some call it a Snark, some call it a squeak grenade, but it's a cute, pudgy little alien bug you can hold and look at fondly until you chuck it at someone, at which point it'll skitter over to them, leap and bite them, and eventually explode. It's gotten a makeover since Freeman had it in the original *Half-Life*, but it's wonderful to have it back in my hand again where it belongs. At least until I throw it in someone's face. Another familiar weapon turns up, too, this

one from *Opposing Force*: the Shock Roach, another Race X bug that warms up to Freeman and obliterates his enemies. There's a gauss rifle, a pipe wrench for when you want to bash someone with something other than a crowbar... hell, there's even a molotov cocktail.

## WARP SPEED

But I think my favourite weapon in *Overcharged* is the warp cannon, which any *HL2* player would immediately find familiar. That's because you'll usually find it strapped to the nose of a Strider and aimed directly at you. Well, now Freeman has a warp cannon, too. It makes a cool noise and a real mess.

Speaking of mess, I immediately noticed *Overcharged* was, well, really messy. Blast an alien with a gun close up, and your hands and weapon wind up splattered with goo. Gun down a few Combine soldiers and you'll get blood all over your gun and gloves. It fades eventually but it certainly adds to the action movie feel of the mod.

And I don't think I've ever seen a mod with quite so much customisation before. In the advanced settings, you find toggles for just about everything. Don't like the blood and goo splattered all over your hands? You can turn it off. You can even dictate what else the blood splatters onto, like ragdolls or other

models. Do the Combine Cremators creep you out? You can make it so they're passive instead of hostile. You can turn on and off friendly fire for your rebel squad, you can choose if you want Freeman's body to be 3D rendered or just the typical floating cam, you can tweak ragdoll settings to determine what they'll collide with, and make adjustments to the HUD and crosshair.



## I THINK MY FAVOURITE WEAPON IS THE WARP CANNON

## KICK OFF

There's way more. In fact, an entire tab in the advanced settings is dedicated to gunplay so you can switch off dual pistols, allow items like fire extinguishers and Metrocop stunsticks to be grabbed and used as weapons, and even toggles for iron sights if you really want to look down the barrel of Freeman's many, many new guns. There are also a whole host of sliders to tweak weapons settings like how long the tau and gauss cannon beams last, how long the AR2 energy ball bounces around, and even how long the warp cannon's black hole lasts. It's shocking just how many settings can be fiddled with, though I barely did any fiddling myself. I just turned on anything that was off and went to town.

Maybe best of all, you can even tick a box that gives Freeman a kicking attack. Yes, Freeman can finally kick stuff just like Duke Nukem. It's nice to use Freeman's feet for something, and that something is kicking Metrocops in the gut. Or kicking open doors instead of opening them by tapping E to use the handle.

I realise that most of this doesn't really sound like a *Half-Life* game at all, but *HL2* has been around for nearly 20 years at this point, so why not turn it into an adrenaline fuelled action movie with a bunch of aliens that aren't even supposed to be there?

Weirdly, the only thing this mod doesn't overcharge is Freeman's flashlight. Neither the major overhaul of *Half-Life 2: Overcharged*, nor Freeman's scientific mind, can invent a flashlight battery that works for more than ten seconds. ■

## FOR SCIENCE!

### Rating the scientists of the Half-Life universe



#### GORDON FREEMAN

Does science once by pushing a shopping cart into a scanner.  
Score: 0/10



#### ISAAC KLEINER

Understands teleportation doesn't know how to keep his headcrab out of the teleporter.  
Score: 6/10



#### ELI VANCE

Built Dog, which is awesome. Built the Scout Car too. Made first contact with the Vorts: awesome again.  
Score: 8/10



#### JUDITH MOSSMAN

Being a double agent isn't cool, but being a triple agent is. She found the Borealis.  
Score: 7/10



#### WALLACE BREEN

It's not quite canon but his brain might have been uploaded into an alien slug. That's pretty sciency.  
Score: 4/10



#### THIS GUY

This cleansuit guy in *Opposing Force* always makes me laugh. Maybe it's the square visor.  
Score: 10/10



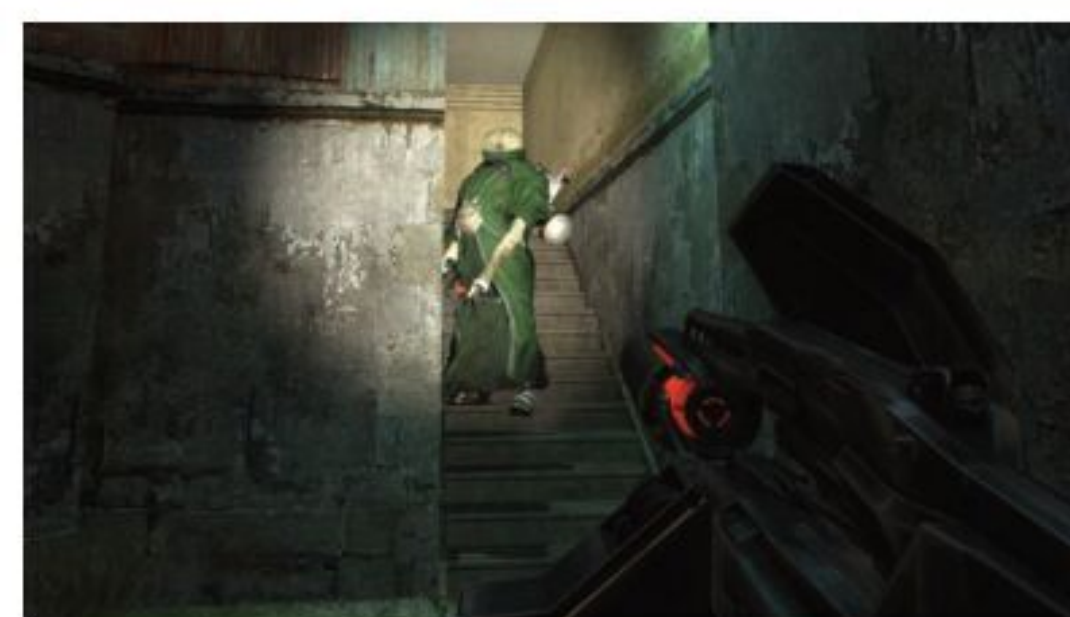


I am not complaining about the Vort companion. He's a real help.



**ABOVE:** The crowbar is no longer Freeman's only tool.

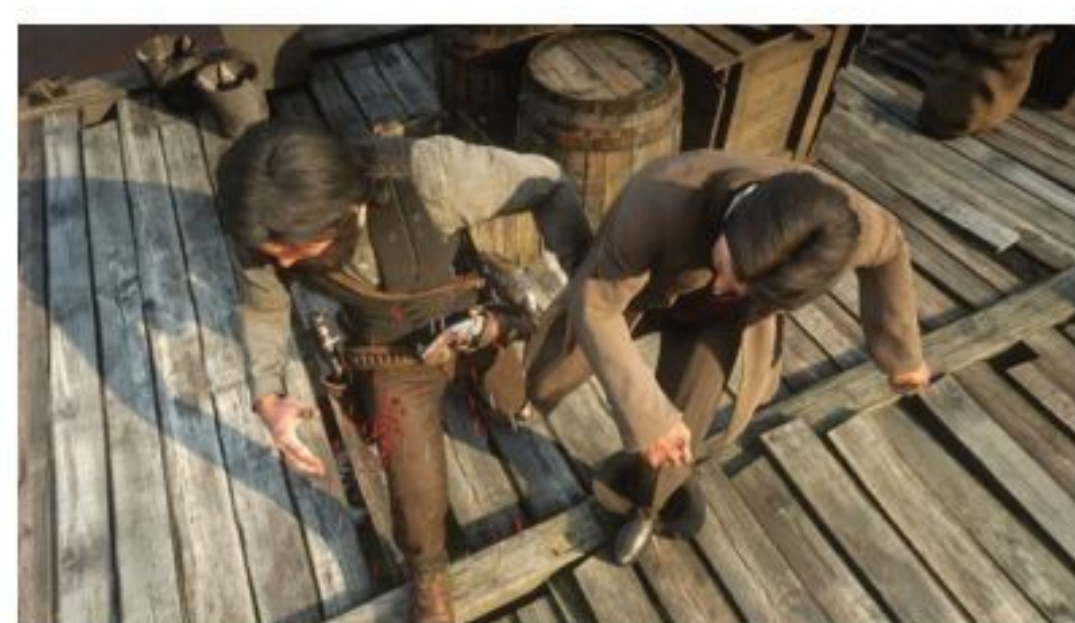
**LEFT:** You can really turn up the blood settings. It even gets on your guns.



Overcharged has a weapon inspection key. This one looks gooey.



If the bar had coasters  
I wouldn't have to  
scrub so hard.



ABOVE: They belong to the swamp now.

This is gonna come up at  
my performance review,  
I just know it.







**BELOW:** I don't think this water is clean enough to clean anything.

**BOTTOM:** Did I miss a spot? I missed a spot.



# JOBS MOD

Some honest work in Red Dead 2. *By Christopher Livingston*

**E**very outlaw, at one point or another, tries to walk the straight and narrow path. Retire from crime and go legit. Get a real job. With the *Jobs Mod for Red Dead Redemption 2*, you can give your outlaw a chance to start over, not as a bank robber or loan shark, but as an honest working Joe. Or, you can try.

I didn't find it all that easy to keep my outlaw out of trouble, even with the nice selection of jobs the mod adds to the game. No matter what I tried – bartender, sheep herder, delivery man, miner, dock worker – I just couldn't keep jobs from going wrong. As the saying goes, you can take the cowboy out of the gang, but you can't take the gang out of the cowboy.

## DOCK ROCK

I start with something that sounds easy and peaceful: a dockworker at the quiet and cruddy town of Annesburg. The mod adds new icons to the map: if you see a yellow icon indicating an anchor, that means you can find a boss at that location and ask them for work. This boss sends me over to the dock to do some fishing, which is something I've done

## NEED TO KNOW

**RELEASE**  
November 5, 2019

**DEVELOPER**  
Rockstar Studios

**PUBLISHER**  
Rockstar Games

**LINK**  
[bit.ly/3KNJUFn](http://bit.ly/3KNJUFn)

plenty of times in *RDR2*, though something about the oily waters off the coast of Annesburg means that despite casting my line and trying to tempt a fish, I keep coming up empty. My shift ends and I have absolutely nothing to show for it. So, I go back to the boss and ask for another chance at earning a wage.

## UNLIKE MY USUAL WORK IN RDR2, NOBODY IS GETTING HURT

This time I'm instructed to head down to the water and fill up a bucket, then bring it back up to the boardwalk, dump it out, and scrub the dusty planks with a broom. I do that for a while, though again I have to note that Annesburg's water is absolutely disgusting and oily, and since my horse insists on following me onto the boardwalk and wiping his hooves all over it, I seriously doubt all this labour is really helping clean anything at all. But work is work, and unlike my usual work in *RDR2*, nobody is getting hurt.

That is, until I decide I've had enough of walking to the water, filling up that bucket, and scrubbing the planks of the boardwalk. My shift isn't over but I've cleaned four separate areas and I think maybe I'll clock out early and get paid, though I'm not expecting the full amount. The boss doesn't pay, however (I

## ODD JOBS

*A few of our favourite work sims*



### LAWN MOWING SIMULATOR

Cut grass. That's really about it. But the mowers are cool, and the chore becomes a lot of fun.



### EURO TRUCK SIMULATOR 2

There's something about hours of trucking while listening to the radio that's really serene.



### FARMING SIMULATOR

If you think farming isn't exciting, think again. Harvesting beets is a thrill. I'm not being sarcastic.



### ELITE DANGEROUS

If you think about it, it's just trucking in space. And everything is better in space.



➤ assume you have to finish the entire shift) and, well, some punches are thrown. I'll be honest, I started the fight. The boss, however, finishes it, punching me to death on the very boardwalk I'd just partially cleaned.

## MINE, NOT YOURS

After recovering, I head back to Annesburg to try my hand at another job: miner. There's nothing more glamorous than hitting a wall with a pickaxe until a piece of it comes off, and that's just what I do. For a while. This time it isn't boredom or restlessness that causes my shift to end early, it's all the boxes of explosives the miners have left scattered around. Considering I'd been playing *RDR2* for an hour at this point and hadn't so much as drawn my six-shooter, those explosive crates grew more and more tempting. After mining my third node, I couldn't resist. I figure I'll quickly blow up a box and then finish my shift.

It doesn't quite work out that way. The box blows up beautifully, but the explosion kills a couple miners and all the miners it didn't kill start running around, ready to snitch. I don't get it, frankly. The fewer miners there are, the more mining there is for the rest of us, right? Well, the mining company, and in fact the entire town doesn't see it that way. My wages, if I ever get to collect any, are going to be spent on my bounty, which reaches into the hundreds of dollars after the ensuing gunfight.

Annesburg wasn't the place for me. I take a stagecoach to the muddy town of Valentine, where nothing bad has ever happened to me. There I visit the bar and ask for a job. While I'd hoped to be mixing cocktails and thoughtfully wiping glasses while drunk cowboys told me their stories, instead I'm dispatched to clean some tables. And I actually enjoy that! If there's a customer sitting at a table they say a little something while I scrub, and nothing explodes for my entire shift. A job well done, and the bartender actually pays me.

I spend my wages on a hotel room, and in the morning I take a delivery job, which instructs me to take a crook from the Valentine sheriff's office to the lawmen in Rhodes. The bounty is already tied up, so I throw him on the back of my horse and set off, ignoring the minimap which is giving my directions back to Annesburg because there are still boardwalks to scrub

and coal to mine. The ride, surprisingly, is uneventful, except for the very end. I accidentally knock a Rhodes resident over with my horse, he drags me into the mud, and we scuffle. I kill him with a head butt. But then I deliver the bounty and get paid. Only a single death! I think I'm getting the hang of this job thing.

## OPEN ROAD

There's no more jobs in Rhodes, so I head to the big city, St Denis. There's a shepherding job available, though I'm a little dismayed to see it wants me to drive a herd of sheep over to Valentine, which I just left. Still, work is work. I hop on my horse and the sheep follow me out of town, except for the one I accidentally trample to death. I'm a little nervous leading sheep through the bayou, which if memory serves is absolutely filled with alligators. But the threat instead comes from a fellow traveller, who rides his wagon right over one of my sheep. That's two down. But the real issue is that the rest of the sheep, having seen their brethren crushed to death, stop following. I shout, I fire in the air, but nothing can bring them back in line. They spread out into their new habitat. They are now swamp sheep. I wish them godspeed and hope the gators accept them.

I return to St Denis, this time into a much classier bar than the one in Valentine, though the table scrubbing is just as enjoyable, and the clientele

is much fancier. In the midst of cleaning tables, however, a fight breaks out. Part of my bartending duties include breaking up brawls, so I wade in and start swinging. Issue is, part of the police's duties are also to break up fights, and at some point my wild fists connect with a cop's face. I surrender and spend the night in jail. I think only two people died, so that's not a completely unsuccessful shift.



## I HOP ON MY HORSE AND THE SHEEP FOLLOW ME OUT OF TOWN

In the morning I'm released and take another delivery job, this one going from St Denis to Valentine. This time I'm not carrying a bounty on my horse but driving a wagon. Sounds great to me! Then I see the wagon, which is actually a massive metal tank owned by the Cornwall Kerosene and Gas Company.

Ah, yes. Who better to deliver a giant explosive tank of combustible liquid than a guy whose CV includes deliberately blowing up a box of explosives at his last job? Knowing it's probably not going to end well, I hop in to the wagon. My minimap is filled with so many lines telling me I still need to return to Annesburg to complete mining or scrubbing, but at least the pips showing all the sheep I abandoned in the bayou have finally vanished. I flick the reins and smash directly into the small wagon parked right in front of me. Nothing explodes, and the wagon driver yells rather than trying to drag me to the ground and beat me to death.

I head out more cautiously. The streets are filled with pedestrians and cops. I accidentally ride down the streetcar tracks for a bit, but no train comes. I slowly, but surely, make my way out of St Denis. So far, this is going better than any job I've had since I scrubbed those tables.

It doesn't last. As I'm winding my way across the map, I take the wagon across a covered bridge. As I near the end, two men jump out, pointing their guns at me. I can't stop in time. They shoot, killing one of the horses, effectively causing this job to fail like most of the rest. I return fire. The wagon explodes. Six people die, including me. I guess I'm just not cut out for honest work. ■

## MOD SQUAD

### Other great singleplayer *RDR2* mods



**CREATE YOUR OWN GANG**  
Screw Dutch. Run your own gang and do your own heists. Just like a real boss.



**MODEL SWAP**  
Why play as a boring old human when you can be a bird, or wolf, or any other creature in the game?



**HOT AIR BALLOON**  
Arthur Morgan doesn't spend enough time airborne. This mod lets you summon a balloon.



**PIG RIDER**  
Horses are nice, but riding a pig through the Wild West? It's just a little bit better.





**ABOVE:** Workplace conflicts should be handled in a healthy way.

**BELOW:** It's important to let off steam during the workday.





The Goth family mansion in *The Sims 3* is a sprawling inspiration to build bigger.



# THE SIMS 3

Back to the best building tools of the series. *By Lauren Morton*

**F**or some, *The Sims* series is a wonderful sandbox simulation in which wacky fake people survive a gauntlet of unlikely house fires or where approximations of school crushes become spouses. For me, it's always been about the building. I've removed a few pool ladders in my day, but I've rarely given Live Mode the time of day since the original *The Sims*. It's always been about the architecture – learning to create floating houses tethered by staircases or designing mansions and realising I don't know what kinds of rooms mansions have. Piano rooms are a thing, right?

I happened to skip over *The Sims 3* – I was leaving for university and was really quite enamoured with MMOs when it launched – and now that I've

come back to it I've realised that I missed out on the best building game in the entire series. *The Sims 3* is bliss for a builder like me.

## NEW OLD TOOLS

It's immediately more configurable than its follow up *The Sims 4*, starting with the neighbourhood editor. Unlike the tightly controlled neighbourhoods with pre-planned lots in the latest game, *Sims 3* allows you to place new lots in various sizes around the neighbourhood, in any spot that the terrain allows – and the terrain sure does allow. My very first lot placement was on more of a hill than I had planned for. Building a house perpendicular to a hill wasn't my intention, but I'm not one to cower from some impractical physics. But even the prebuilt lots in *The Sims 3* are frankly pretty brave in their choice of terrain.



After using the neighbourhood editing tools to plop a few extra trees and rocks just outside my new lot, I head into build mode to find out just how over my head I'll be in a 17-year-old game. Luckily, the terrain tools for manipulating the dirt of the hill I plan to die on are largely familiar. It doesn't take me long to build a nice flat buildable space jutting out the side of my hill by using the raise terrain tool followed by the level terrain brush to create a buildable area and the soften terrain brush to make the edges of my house's eventual foundation less sharp. With all the dirt moved around to my liking, it's time to tackle a bigger project – a proper house.

Initially, I'm short on inspiration and slightly discouraged by the fewer style options available in *The Sims 3*. It does have a lot of brick wall choices, and I get further discouraged as I slap them on the walls of my rudimentary box to find that the dated, lower resolution textures don't

## NEED TO KNOW

RELEASE  
2009

DEVELOPER  
Maxis

PUBLISHER  
Electronic Arts

LINK  
[bit.ly/3vtE1b4](http://bit.ly/3vtE1b4)





**ABOVE:** My *Sims 3* home includes white-painted window trim and a rug I designed.

**RIGHT:** A landline phone? Wow, this game really is old.



look so lovely on my big, modern monitor. Until I find my favourite tool in the entire game.

### KNOCK ON WOOD

Anyone who has spent time building in *The Sims 4* is certainly familiar with my greatest nemesis: wood swatches. *The Sims 4* has a frustrating fascination with wood furniture, all in different shades that never quite go together. Do you want your dining room table and chairs to match?

Don't you dare mix sets. Want to experiment with some living room furniture from a few eras? Get ready for an ugly wood grain rainbow. Don't even think about wood windows. I hope you like white, or those aren't going to match either. For all its countless options, *The Sims 4* really requires that you stick to certain combinations of objects that are meant to go together. Even after adding hundreds of new colour swatches to all sorts of decor in a

## YOU CAN APPLY ANY PATTERN AND ANY COLOUR TO JUST ABOUT ANY OBJECT YOU LIKE

2021 update, *The Sims 4* annoyingly refuses to get matchy.

In complete contrast is *The Sims 3*'s greatest feature: the all powerful, much beloved, and dearly missed Create-A-Style. This handy tool includes all of *The Sims 3*'s material swatches for woods and carpet and cloth and metal, along with a colour picker to change those materials to any hue you please. You can apply any pattern and any colour to just about any object you like – whether it's windows or columns or couches or lamps. Unlike *The Sims 4*'s highly curated collection of options, *The Sims 3* just puts the entire craft box in my hands and says 'good luck'. And oh how lucky I feel! Time to sort out that matching window conundrum once and for all. I deserve to know some sort of peace.

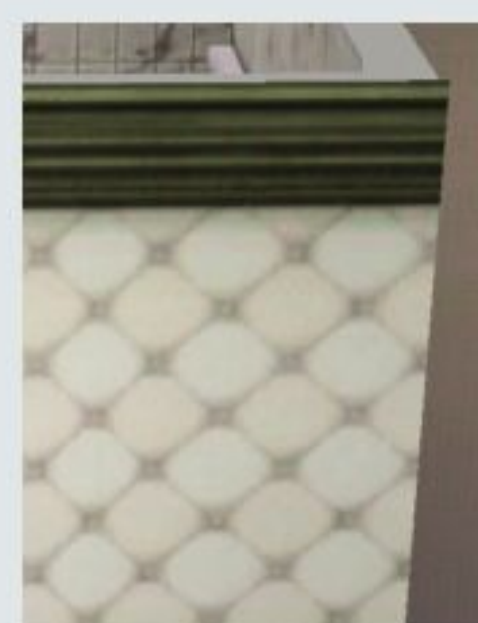
I slap down five different windows in totally different styles and, of course, they do not have matching natural wood colour options by default. One option is

## SWATCH WATCH

*My new favourite patterns*



**SUBWAY TILE**  
This look is going to be perfect for a modern kitchen backsplash. It'll be a statement about urban living.



**TUFTED UPHOLSTERY**  
Upholstered walls? Yes, I think I will find a way to make this work. Or just put it on a sofa.



**GEOMETRIC PATTERNS**  
My current favourite geometric pattern, which looks great with subtle, slightly different colours.



**WILD WEST**  
This delightfully tacky print features cowboys riding bulls. I'm eager to create design crimes with this in some fashion.





**RIGHT:** The best part of this exterior is the matching windows and decks.

**ABOVE:** *The Sims 3's* default builds go absolutely wild with terrain.

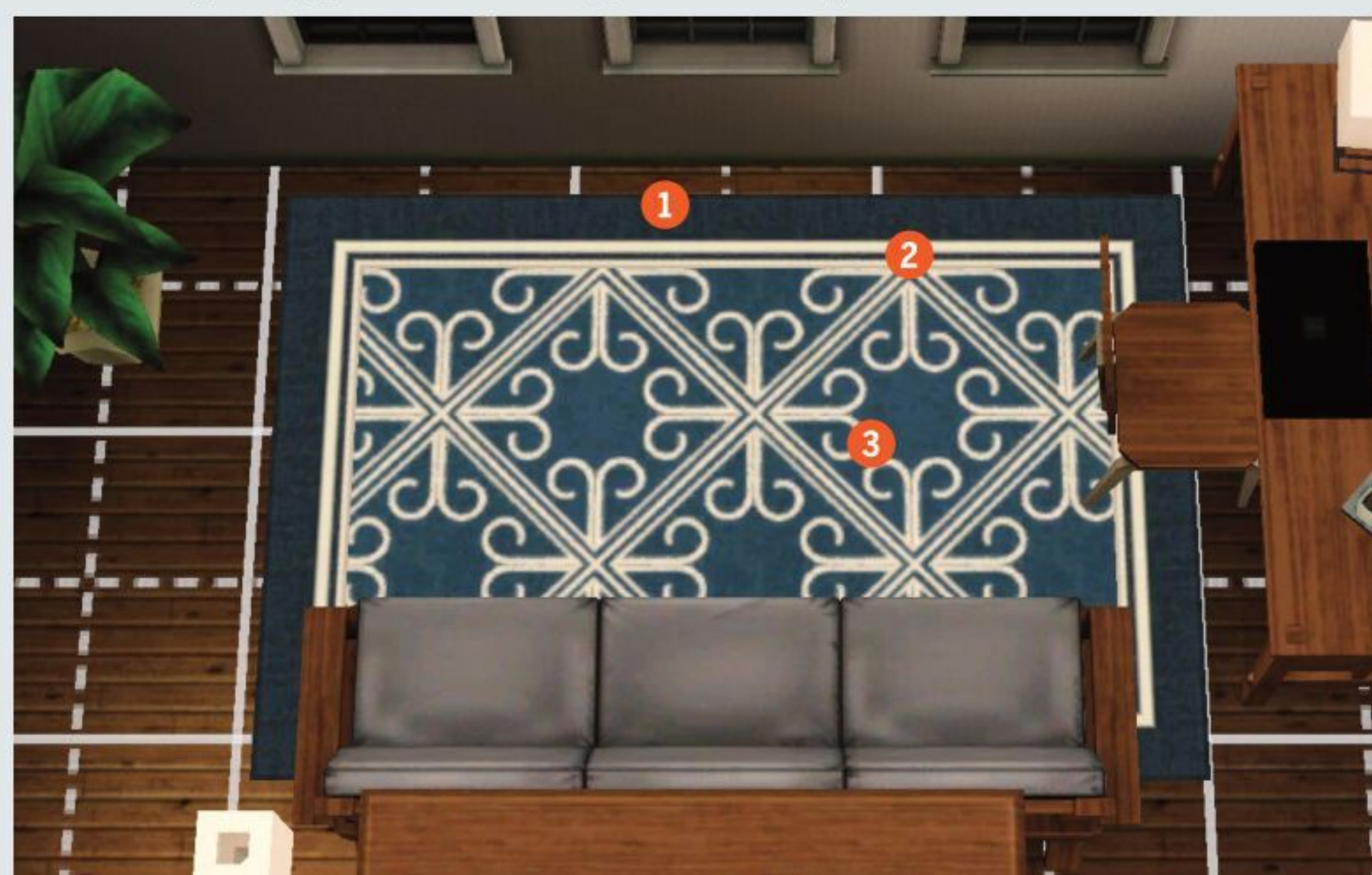
**FAR LEFT:** My *Sims 4* tiny house inspiration.

» slightly too orange-y, another too dark. I can't possibly get them all to play nicely together... until I open up the Create-A-Style tool, and use its magic to drag and drop the material and colour from the menu. Let me

present to you, my fellow *Sims 4* builders, with several windows in different styles, that all have matching natural wood colour. Behold their beauty and my top-notch design skills.

## RUGGED

*Make any rug you can imagine! Such power...*



**1** I've picked a nice, normal striped pattern for the outer rim of this rug – starting simple is key.

**2** This pattern has three different colour channels for the outer, second, and inner stripes.

**3** The interior pattern is a geometric one, with two colour channels that I matched to the exterior.

## FRAME PERFECT

With the window situation handled, I really start colouring outside the lines, digging deep into *The Sims 3's* weirdest patterns and revelling in anything unlikely I can throw them on. After discovering the majesty of creating cow print wallpaper and metallic upholstered armchairs, I decide it's time to pit *The Sims 3* against *The Sims 4* directly.

I pulled up a tiny house I recently built in *The Sims 4* and got to work copying it in *The Sims 3*. It takes me several minutes to figure out that creating a foundation and deck for the lot works differently than in the newest *Sims*, but after plotting both out, building is largely quick and familiar. Aside from the roofs. I don't want to talk about the roofs. I'll never master them in any *Sims* game.

The power of *The Sims 3's* Create-A-Style is both in its openness and its precision. Many items, like a sofa for instance, have several slots corresponding to their parts – one for the arms and one for the cushions in this case. I can use any pattern I like in those slots and also choose a colour for them. Patterns often have multiple colour channels, even. It's a rabbit hole of design choice. To keep things tidy though, I can favourite a





material I've created, or grab the hex code colour from a piece to pick one that matches it. Not all materials wear the same colour exactly the same, so there is a little fiddling on my part to make the wood slat boards on my walls match the crown moulding above them, but the power to fuss with the colour picker until I'm happy is fully in my hands.

In all my experimenting, the wall treatments and rugs are the biggest beneficiaries of the Create-A-Style tool. Although *The Sims 3* has plenty of its own wallpaper and wall paint options, with and without trim or crown moulding or beadboard, there's so much power in changing a floral wall print to exactly the shade of blue I was looking for. As in real life, those wall colours set the personality for an entire space. Rugs, which I've never gotten on with in *The Sims*, are now one of my favourite little design puzzles.

It strikes me, as I'm picking the exact light brown shade of vaguely oak for my kitchen cabinets, that this is the point at which I should probably be stricken with choice paralysis. *The Sims 3*, through the majesty of the Create-A-Style tool, gives me an excess of options that would normally have me shutting

## I'VE CREATED A CUSTOM WALLPAPER WITH A SUBTLE GEOMETRIC PATTERN

down and overwhelmed, but I am absolutely enamoured with it.

In *The Sims 4*, I lose so much time agonising over the swatches I'm given, trying to creatively mix living room furniture sets and knowing that the bar for success is just finding the combination that clashes least. In *The Sims 3*, I'm free to choose a coffee table and sofa whose silhouettes I like and then give them matching wood tones that make them look as if they definitely came from the same home store collection.

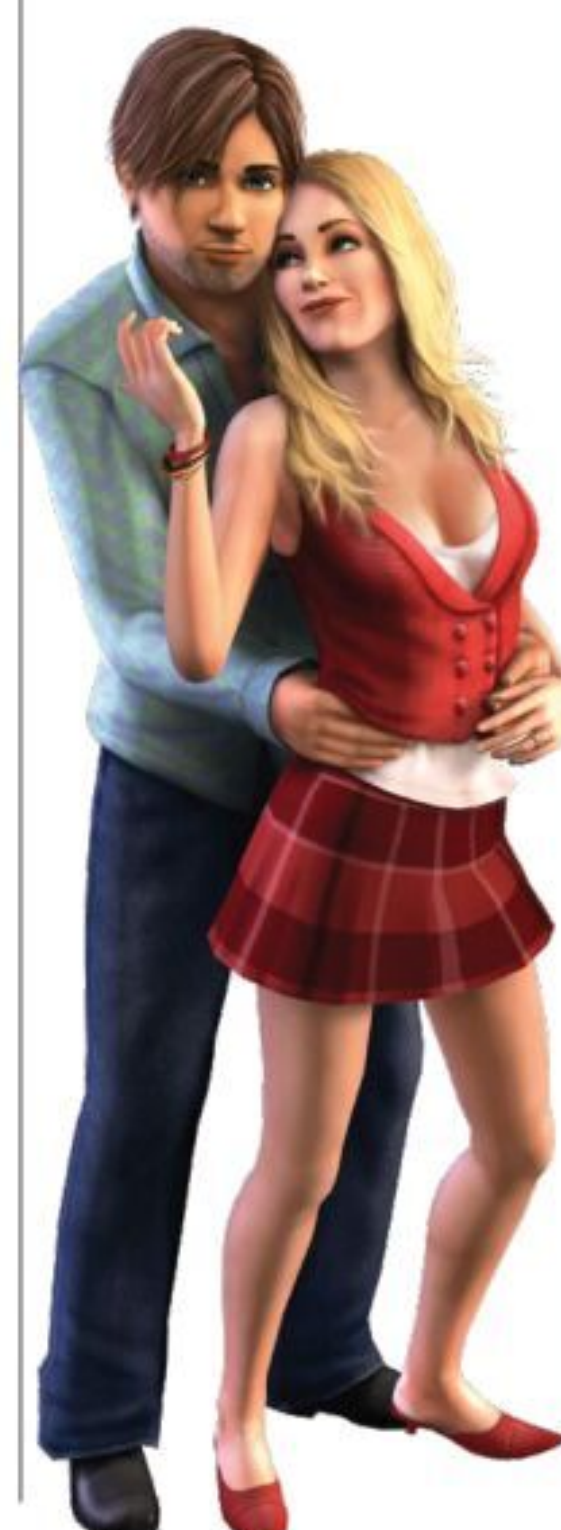
By the end of all of this, I've created a custom wallpaper with a subtle geometric pattern that I'm quite proud of, designed a dining room set in matching wood colours, and put my personal touch on the marble kitchen counters too. I created matching windows throughout the house which have natural wood on the outside and are white on the inside because it reminds me of the way that people flip houses by painting wood trim

white where I'm from. I definitely went off spec at some point, adhering to the shape of my *Sims 4* build inspiration but not necessarily its colours. Even so, the experiment is more of a success than I anticipated.

## STRONG FOUNDATIONS

*The Sims 3* is certainly older. Its textures are lower resolution and it has a more realist visual design that's not as charming as the stylised *Sims 4* look. But this house is so much more mine than the one I built in *The Sims 4*. I've designed nearly every piece of furniture in it exactly the way I like, not even bothered by the relative lack of silhouette choices compared to its newer sibling's catalogue. For even further choice, *The Sims 3* allows you to import new swatches and materials created by other players. It's impressively permissive, and not to a fault.

I don't think *The Sims 3* will generate the lovely screenshots I'll want to show off in build challenges with other Simmers, but I'm positive that I'll return here any time I have a specific look in mind that I know *The Sims 4* simply doesn't have the swatch options to support. Oh, and *The Sims 3* has garage bay doors. Truly, what more could I want? ■







**LEFT:** Look at all those little guys! Adorable.

**ABOVE:** This is what peak graphical performance looks like. Or what it looked like in 2007, at least.

**RIGHT:** The setting is a thousand year conflict dubbed The Infinite War. Take that, Warhammer 40K.

# SUPREME COMMANDER

The demanding RTS runs well on modern machines. *By Luke Winkie*

**T**here is no high quite like the emasculated agony of graphics envy. It was 2007, I was 16 years old, and still fully bound to the limitations of the Xbox 360 and PS3 in the bedroom. The hand-me-down laptop whirring on the desk could barely handle *Battlefield 1942*, much less the relentless tempo of speedy processors dutifully obsoleting the seventh generation of home consoles. Still, I voraciously tore through the games press, reading up on the mouthwatering vistas that were enthusiastically unavailable on a Dualshock, essentially as a way to torture myself. The primary object of my obsession? *Supreme Commander*.

Gas Powered Games' watershed RTS arrived with exactly one selling point;

this thing was a beast, and you should be jealous if you couldn't run it. And so, I binged the 360p E3 preview footage of *Supreme Commander* on my sad, dinky laptop, which seemed to wheeze and gag at the mere sight of all of the quicksilver troops swarming over the skirmish fields. So close, and yet so far.

It sounds strange now, but there was a time in the mid-2000s where every GPU benchmark was set by the latest round of RTSes – much in the same way that Sony shows off new Playstation tech with rain-slicked Lamborghinis in a sumptuous *Gran Turismo* suite. If you grew up almost exclusively on consoles like I did, you became accustomed to this beautiful heartache when the PC class laps whatever third-party ports emanating from the family TV. 2007 was the apex of the cycle. Here I was stuck with, like, *Mercenaries 2* while the



adults in the room ran circles around us with the finely modelled tools of destruction deployed by Crytek and Relic. As I soaked up those titanium-plated mechs and supersonic bombing runs of the gorgeous *Supreme Commander* dystopia, I made a private pact that should be familiar to the many other young men reading this story. Someday, I too will dump a ton of my hard-earned income into a top-tier gaming rig, and then I'll never be left in the dust ever again.

It goes without saying that the Alienware Aurora below my desk is more than capable of running *Supreme Commander* in 2022. This machine just chewed through *Elden Ring*, *Battlefield 2042*, and *Forza Horizon 5* without a hitch; I put my money where my mouth was. There is something darkly satisfying about returning to a videogame that was once a GPU showcase after much time has passed – much in the same way a crosstown rival relishes the

## NEED TO KNOW

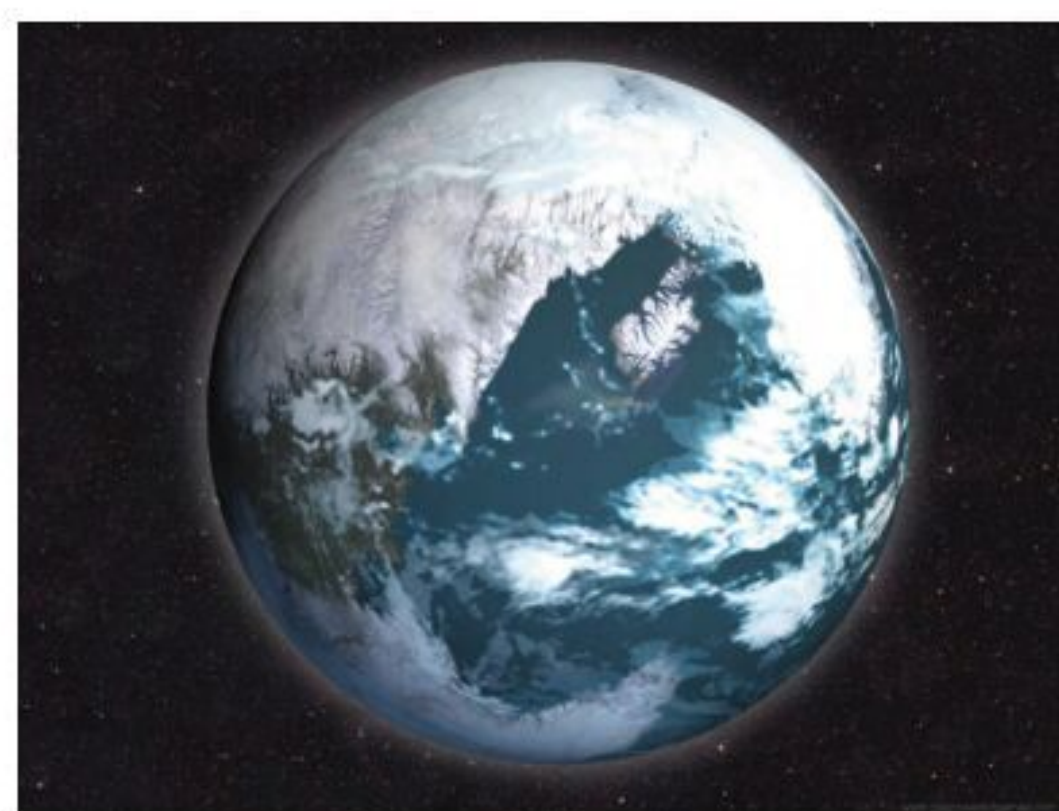
**RELEASE**  
February 20, 2007

**PUBLISHER**  
THQ

**DEVELOPER**  
Gas Powered Games

**LINK**  
[bit.ly/3vfgWbJ](http://bit.ly/3vfgWbJ)





chance to get their revenge on a formerly great sports team. *Supreme Commander* creaks out of my Steam library with none of the expected orthodoxies of the last 15 years. The resolution sputtered to fit the aspect ratio of a widescreen monitor, any stray alt-tabbing was guaranteed to lead to a lock-up, and I actually needed to slow down my mouse cursor speed to molasses levels in order to cut down on the 120fps whiplash. At last, after the humiliation of my Xboxified youth, revenge was finally mine. But at what cost?

### BLOWING OFF THE DUST

Gamers have rarely asked for much from a graphical standout beyond their aesthetics. Simply watching *Supreme Commander* run was half the appeal in its heyday, so I was not surprised that the campaign offered me a few paragraphs of sparse flavour text before dumping me into the barren grasslands crucial to the RTS experience. The missiles are supposed to do the heavy lifting, right? So, a few power generators and mass extractors later, the war machine was up and running, and I was ready to make good on a derelict

## THE RESOLUTION SPATTERED TO FIT THE ASPECT RATIO OF A WIDESCREEN MONITOR

promise I made with my teenage self. But reader, just look at what time hath wrought. The starchy textures of the earth stretched out in every direction, featureless and bland, almost *Cruelty Squad*-like in its disorienting uniformity. The tank-shaped blobs that steadily pumped out of my munitions factory looked better, but not by much. They encircled the rival base and peppered it with raw, pixelated smoke and fire. It would've been right at home on the App Store, advertised in the bleakest corners of the web.

How can that decay happen so quickly? *Supreme Commander* hasn't even celebrated its 20th anniversary, and yet its prime attribute has been absolutely obliterated by the PC power curve. A chill ran up my spine as I realised that this fate has probably befallen all of its peers; after all, it's been a while since I've seen *Crysis* up close, too.

Maybe this is a fitting fate. I have a faint memory of RTS diehards

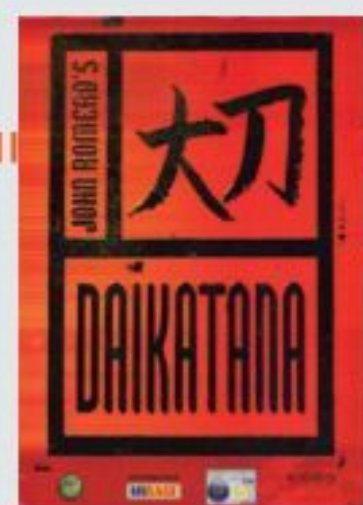
## THE BEST GAMES YOU CAN'T RUN

A brief timeline of all the games we upgraded our PCs for



**DOOM 1993**

Yes, *Doom* was a beast long before we were running it on iPhones.



**DAIKATANA 2000**

If only the specs matched up with the gameplay.



**CRYSIS 2007**

Some say even the beefiest machines still shudder at the sight of that jungle.



**RISE OF THE TOMB RAIDER 2015**

Were the ponytail physics worth it?





» dismissing *Supreme Commander* while it was still at the peak of its influence, complaining that the game was more sizzle than steak compared to its deeper, but considerably uglier peers. (After all, *Company of Heroes* came out a year before.) I would never claim to be an expert of the genre, but after surviving the temporal horror of the boot-up, where it becomes excruciatingly clear that we're all deteriorating right alongside the video games we used to play, I can say for certain that Gas Powered Games got a bad rap. The studio was clearly in love with their tech, and

gave the player ample opportunity to fill the screen with as many troops as possible. It's a philosophy that produced a gaucheness that likely turned off some of the traditionalists. My favourite quirk? Anyone can send an engineer into a blazing firefight where it can happily plop down a fresh manufacturing operation totally divorced from any adjacent resources or supply lines. Are you being victimised by bombing raids? No problem, just encircle yourself with a battalion of flak cannons anywhere on the map. These are the sort of firefights dreamt up by the most perverted

**ABOVE:** The game was a spiritual successor to *Total Annihilation*.

Warhammer sickos; an endless tide of shocktroopers born into battle and living five-second lives.

### STEP ON THE GAS

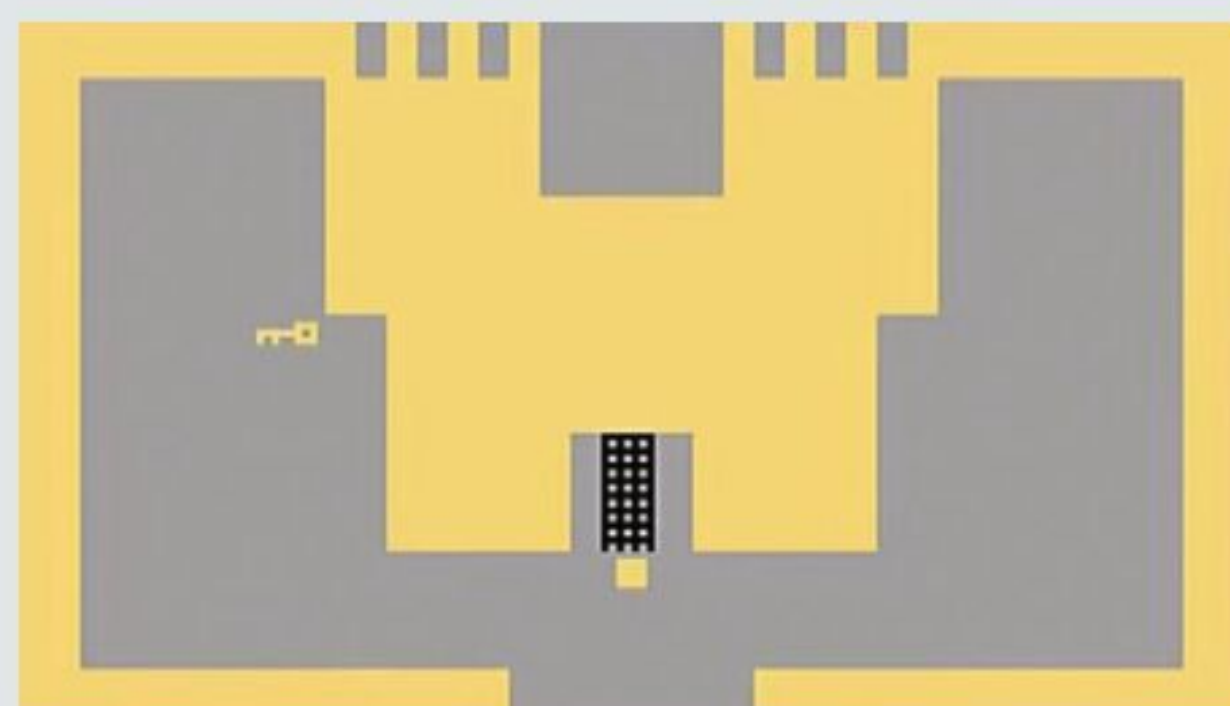
So yes, *Supreme Commander* is a little bit silly, but only as a way to summon up the primal joys of real-time strategy. If *Mortal Kombat* is a grotesque celebration of 100-hit combos and old-school arcade depravity, then this studio wished to celebrate the full-scale pyrotechnic throwdowns that define our favourite tactical successes. I never really loved managing an economy in the first place, and slamming up against the

## CUTTING EDGE To think that these games once represented the apex of graphical fidelity



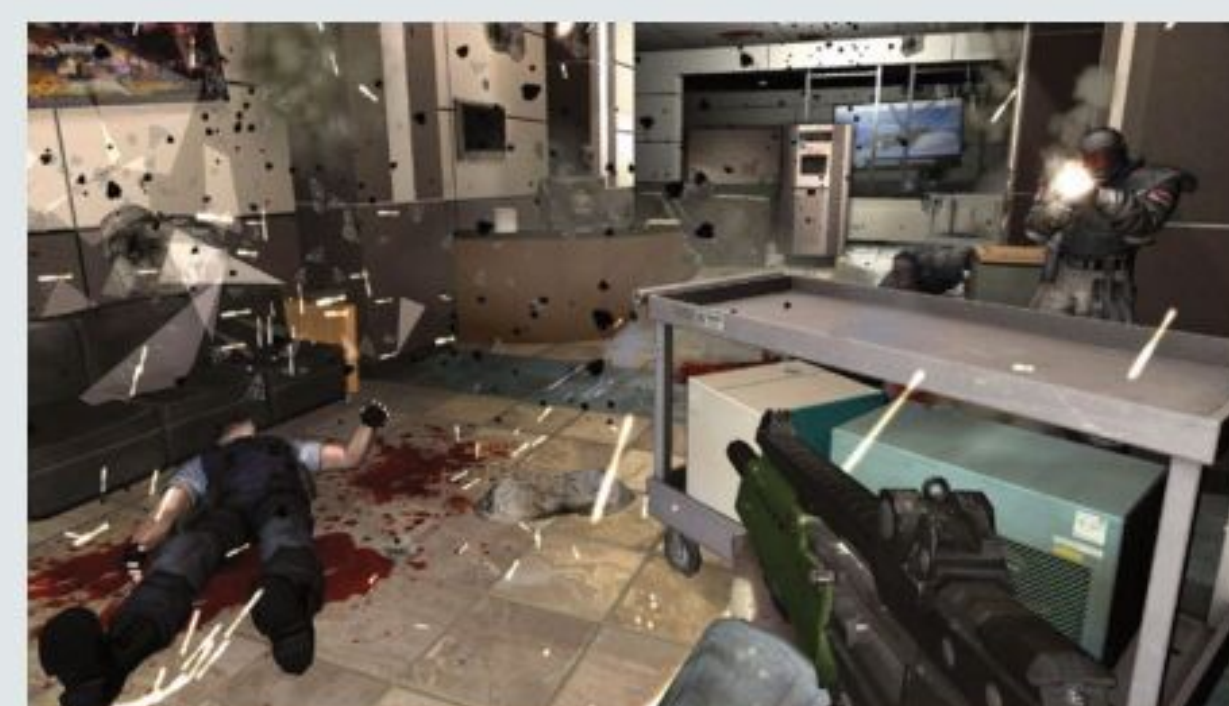
### VIRTUA FIGHTER

Four, maybe even five polygons of action!



### ADVENTURE

Say what you will, but that castle texture is still great.



### FEAR

Never tell anyone under 20 that this used to scare you.





**ABOVE:** Maybe that's just what ground looks like after a thousand years of warfare.

**RIGHT:** The sheer scale is still pretty cool to behold.



guardrails as I was trying to produce a legion of Mutalisks in various harebrained *StarCraft* schemes. Gas Powered Games was entirely disinterested in beating around the bush, and instead allowed players to prioritise whatever warfighters they want so long as the energy ratio is pointing up. Perhaps that's why there's still a small, dedicated *Supreme Commander* community crashing into each other on the desiccated servers. I became absolutely terrified to play them the deeper I got into the campaigns. There are so many bizarre strategic curveballs in this game, and that has undoubtedly consolidated into an abstruse meta that would leave me pantless and sobbing against even the most casual opponents. You really can build anything, which means you need to be scared of everything.

### CAMPAIGN TRIP

That was fine with me though, because it's been years – maybe even decades! – since I sat down with an old-fashioned RTS solo story. You know what I'm talking about; disembodied voices hovering over NPC megabases, a foreboding mission timer in the corner of the HUD counting down to a game-

## YOU CAN BUILD ANYTHING, WHICH MEANS YOU NEED TO BE SCARED OF EVERYTHING

losing assault, the developers desperately squeezing any potential varietal out of what will always be a fairly straightforward premise. (Destroy the enemies halfway around the map. Leave no survivors. Prepare for a crippling counterattack.) It all took me back to a happier place. In one level I was supposed to use an air transport to hoist a crucial unit over some distant mountains that bracketed the map into two theatres. First though, I needed to rout the mobile anti-air cannons patrolling the no-man's land. Out came the tanks, blasting through the heavy steel, avenging all of my doomed pilots. That's the sweet spot for me: an RTS objective that doubles as a weird, rock-paper-scissors logic puzzle. If it's been a while since you've indulged in that erstwhile gaming pleasure, then I highly suggest coming home to *Supreme Commander*.

Honestly, that was my primary takeaway from the game, as it slowly



morphed from an artefact of GPU lore to, well, an ordinary piece of outmoded software. This industry is cruel to its ancestors, especially those that once annihilated the motherboards of yore. In fact, I'd reckon that most people's relationship with *Supreme Commander* was one of inaccessibility – a faint idea of wondrous gaming superiority, something to flaunt over the plebs. All of that macho posturing has gracefully evaporated, leaving behind a very good RTS with a lot of neat systems, coming off more like an underdog indie project rather than the harbinger for a new era of PC engineering. In 2022 *Supreme Commander* is ugly, janky, and hopelessly out of step with modernity, but at least the giant robots explode in a nuclear fireball when they're killed. It was awe-inspiring in 2007, and now comes off kind of quaint – videogames in its primal adolescent period. Surely it is only a matter of time before another high-budget opus laps whatever I've got simmering under the hood, provoking a stressful search for a few extra gigs of RAM. That trick will keep working on me forever, and I'm all the happier for it. ■





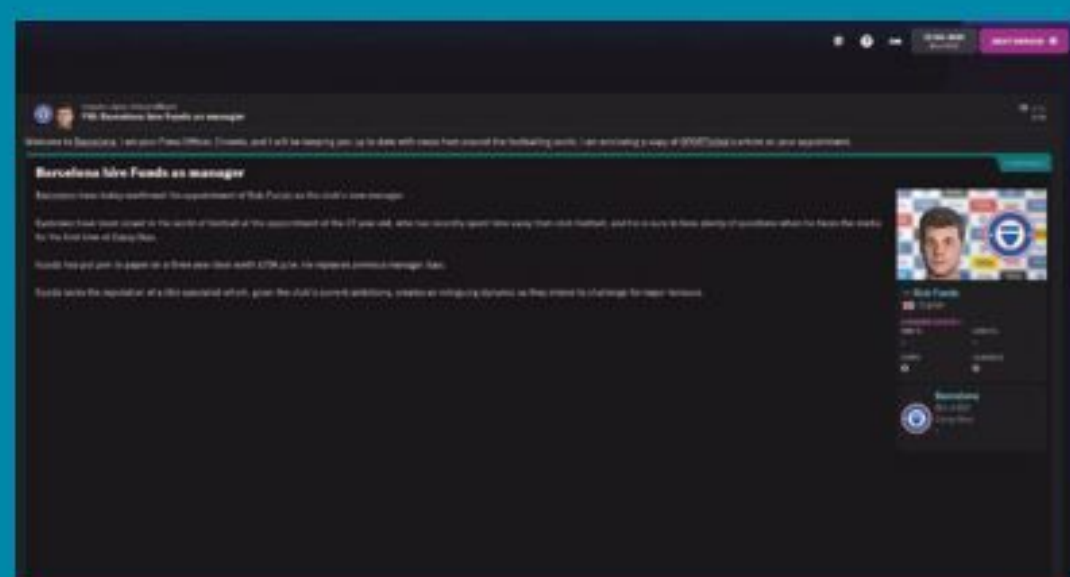
WHY I LOVE

WHAT MAKES GAMES SPECIAL

CHEATING IN

# FOOTBALL MANAGER

Dastardly dealings from inside sport's greatest spreadsheet. *By Phil Iwaniuk*



**LEFT:** £29.5 million on an unproved lower-league youngster. Why not?





**V**ery few football fans will be familiar with the career of former Barcelona manager Bart Celona. Only those who lived within the savegame of my *Championship Manager 2* career were there to witness his brief but eventful three-week stint at the giant, during which time he broke concurrent transfer records on several unheard-of English teenagers from York City and brokered staggeringly generous deals on Barca players going the other way.

As the years went by, it wasn't so easy to cheat at *Champ Man*. It's always been possible to conjure up a new manager and add them to any club in the world, but over time their rampant recklessness was tempered by higher-ups. Try to siphon away Real Madrid's fortunes and boards got involved, casting a suspicious eye over the transfer targets of their newly appointed Ray Almadrids, and stepping in to block moves that they deemed 'unrealistic'.

Of course, that only made the cheating more delicious. It's one thing to player.additem your way to riches in *Skryrim*, ticking up an arbitrary number with a console command, but breaking the game in *Football Manager* requires a level of lateral thinking that goes way beyond finding the command that makes your number of goals go up.

The classic cheat move, series-long, is save-scumming. I found myself doing this in the particularly unpredictable *Football Manager 2005*. Here's how it works: let's say you're particularly aggrieved by the way Arsenal beat your Middlesborough

## NEED TO KNOW

**RELEASE**  
November 8, 2021

**DEVELOPER**  
Sports Interactive

**PUBLISHER**  
Sega

**LINK**  
[footballmanager.com](http://footballmanager.com)

## THE EMBEZZLE ONE

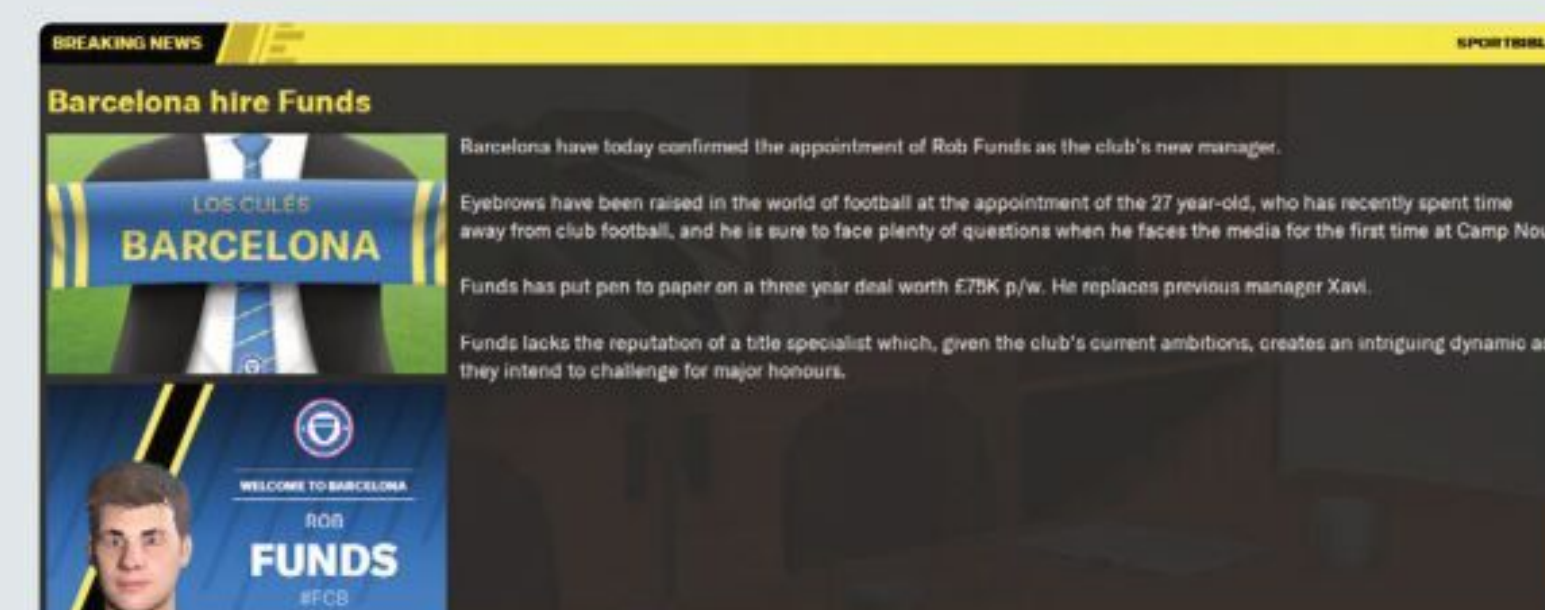
### How to spot a fraud manager in FM22

**1** No previous history in management

"Says on your CV you quite like football – when can you start?"

**2** Immediately employed by massive club

Most bosses cut their teeth in lower leagues. Not this one.



**3** Improbable pun or insult for a name

Ask yourself: how many Phuq Hughs have you met before?

**4** Resigns after three weeks

And not just from the club. That's him and management totally done.

side – two late penalties, for goodness sake. You reload the game, set up your team the exact same way, and expect the match engine to right the wrong. Instead you're beaten 4-1. The only option now was to create a new manager at Arsenal with an insulting name, play Henry in goal, and a 2-2-2-4 outfield formation filled by youth goalkeepers. The resultant 11-1

## YOU'RE MANAGING IN THE BUNDESLIGA, BUILDING A CONTENDER WITH MAINZ

win did feel a bit hollow, but three points are three points.

### FOUL BALL

And that rather circuitously brings us up to modern-day *Football Manager 2022*, a game so wise to our ploys that we have to devise outlandish schemes to put one over on it. Of course, we could buy the game editor as DLC, or FMRTE, instead. I would never condemn anyone for renaming one of their youth players after themselves and editing all their stats

to 20. But it's a different kind of cheating. What's always interested me is cheating within the rules.

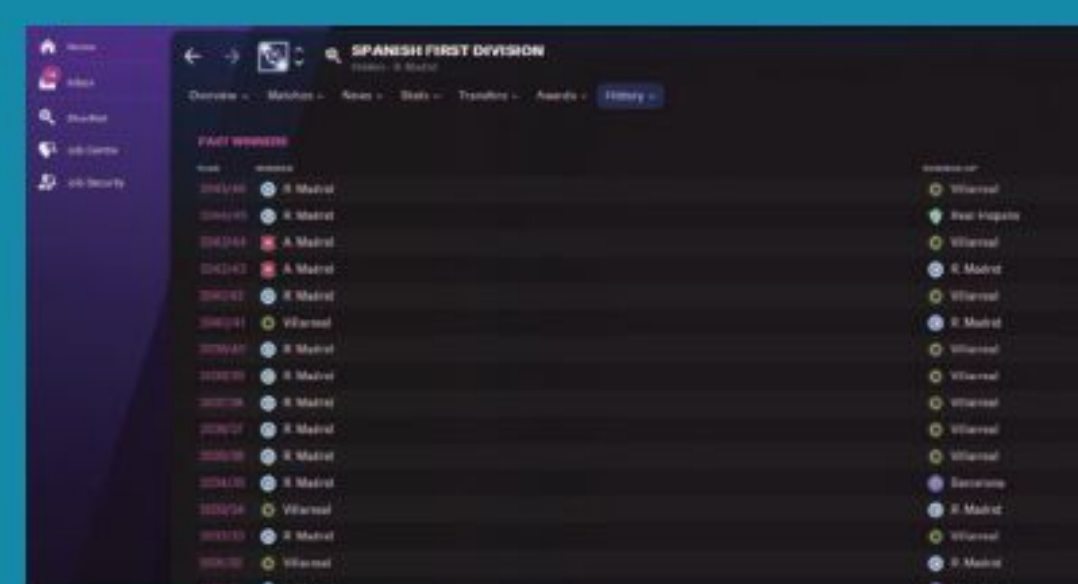
You're managing in the Bundesliga, slowly building a contender with Mainz. But every time one of your signings reveals himself to be of real quality, Bayern buys him. You've tried a few times to just reject their transfer bid and leave it at that, but Bayern never does leave it at that. It's a rich club, and it can afford to keep raising its transfer bid until your own board are convinced to force it through at all costs. Your bosses insist that the deal is too good to turn down, so Mainz stays exactly as good as it was before you joined. You know what must be done.

Bayern fans are baffled to see a totally unproven manager appointed the following day. Guy Enmunich is cagey about his approach in the press conference, but proves himself quite decisive in the coming days, releasing 16 players on free transfers. Most of the previous starting 11 are shipped off abroad and are priced to sell.

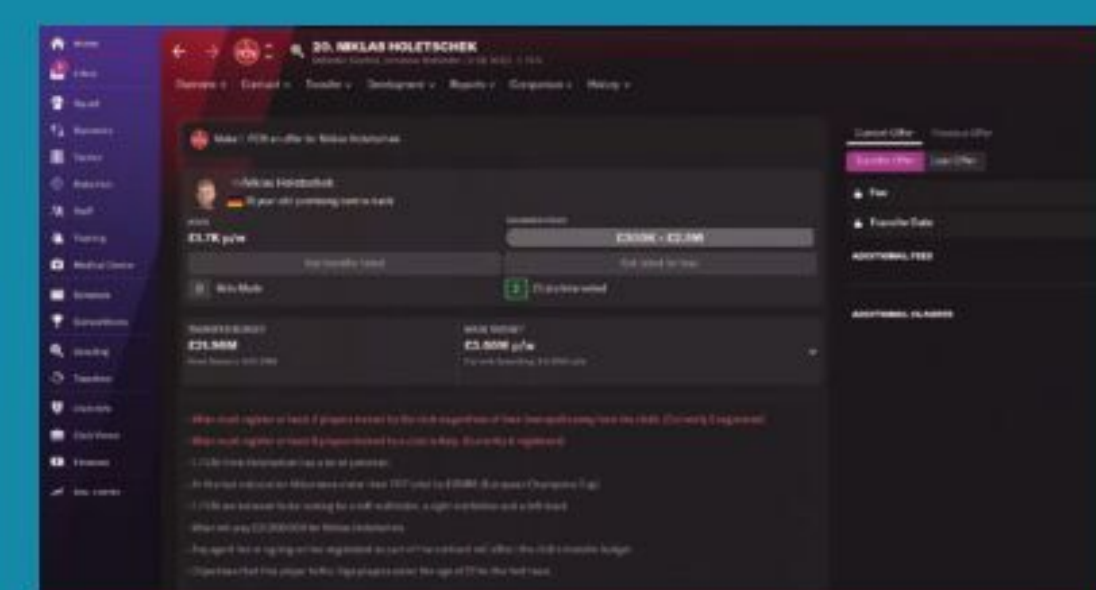
Enmunich quickly reinvests his newly generated transfer funds, into – of all places – Mainz's current crop of youngsters. They've shown little sign of promise thus far, but that hasn't stopped Bayern from shelling out over 100 million Euros in total on nine bemused teenagers.

There's a bit more business to be done with Mainz – four players only recently signed to FCB from Mainz make their way back there – and then, just weeks into his tenure, Enmunich retires from football.

Bayern are now screwed for years to come. All their best players are gone, they've spent the proceeds on useless youth prospects, and their new manager's actually playing them in the first team, what with all the money that was just spent on them. You couldn't even call it revenge, really – but give us a spreadsheet and some players with numbers above 15 in their stats, and this is the level of monstrosity we'll succumb to. ■



**LEFT:** It's 2045. Barcelona haven't won a title in 16 years. Revenge attained.







WHY I LOVE

WHAT MAKES GAMES SPECIAL

# SHOOTING FROM THE HIP

Celebrating the modern shooters that make aim-down-sights optional. *By Morgan Park*



**RIGHT:** *Back 4 Blood* players can use attachments to make hipfire viable.





**T**here is no better bliss in an FPS than the perfect hipfire kill. Sometimes, we hipfire because it's faster or because it's accurate, and sometimes we just want to best our foes with a bit of style. There's an implied flex to the hipfire that I absolutely love – as if you're such a good shot that you don't need to plant your feet on waist-high cover and look down a scope to pop headshots. What a power move!

The FPS was founded on hipfire. Some of the best shooters ever made are fun, in part, because of the hipfire. And yet, the last 20 years of videogames has seen this empowering ability nerfed into the ground. Most modern games favour the ADS (aim-down-sights) mechanic as a requirement to be accurate. There's lots of fun to be had with that kind of game as well, but the 'right mouse aim/left mouse shoot' standard slowed shooters down and relegated hipfire to an inaccurate secondary fire. Thankfully, the hipfire is back on the rise in recent years with excellent FPS throwbacks and modern takes that marry the two aiming styles together.

Hipfire has been on my mind a lot lately as I play through *Back 4 Blood*, Turtle Rock Studios' spiritual successor to *Left 4 Dead*. Now nine years removed from *Left 4 Dead 2*, I still consider it some of the purest FPS fun you can have with friends due in no small part to its hipfire-heavy gunplay.

I was afraid *Back 4 Blood* would lose some of this magic when I learned it'd feature modern FPS mechanics like sprinting and ADS. Now 15 hours into the game, I think my prediction was true, but hipfire is far from dead in *Back 4 Blood*.

On the contrary, hipfire is a reliable strategy at mid-to-close range that becomes even more powerful if you spec into that direction using the

## ZOOM IN

*The military shooters that popularized ADS*



### DELTA FORCE 1998

While the *Delta Force* doesn't have what we'd call ADS in 2021, it does have an on-screen scope.



### OPERATION FLASHPOINT: CWC 2001

One of the earliest shooters with a genuine iron sight view for its guns.



### DELTA FORCE: BLACK HAWK DOWN 2003

A military shooter that captured a multiplayer audience.



### VIETCONG 2003

Released after *Black Hawk Down*, *Vietcong* demanded players to use its ADS view in order to be accurate.



### CALL OF DUTY 2003

2003 was a big year for shooters. *Call of Duty* broke the ADS shooter out of the tactical realm.



### CALL OF DUTY 4: MODERN WARFARE 2007

*Modern Warfare*'s popularity set the tone of FPSes for the proceeding years.

game's card-based upgrade system. One of the playable characters, for example gains an accuracy buff every time he scores a headshot, and there are several cards that disable ADS in favour of increased hipfire accuracy. I've grown to love the system for encouraging a wide variety of

## HIPFIRE HAS BEEN ON MY MIND A LOT LATELY AS I PLAY THROUGH BACK 4 BLOOD

playstyles in a way *Left 4 Dead*'s simplicity can't support.

### NEW CLASS

No game better embodies the throwback, hipfire-heavy FPS than id's modern *Doom* series. Both *Doom 2016* and *Doom Eternal* are the anti-*Call of Duty*, demanding that players stay on the move constantly to stay alive.

There is zero friction between Doomguy and his ability to shoot – that means no ADS option on most guns and no reloading. By default, Doomguy is perfectly accurate while moving at full speed and it's sensational to play. The game's combat would simply fall apart if it were any slower, so it's no wonder that recent shooters like *Necromunda: Hired Gun* have tried to capture the same hipfire-heavy action.

As good as it is, *Doom* is still somewhat of an anomaly. The majority of shooters out there that have a hipfire worth a damn also let you ADS in one way or another. An interesting newer example is *Halo Infinite*. *Infinite*'s guns are 100% accurate from the hip, but similar to *Halo 5*, every gun also has an ADS option that's deactivated if you're shot while using it. After playing both multiplayer betas held so far, I'm liking the compromise.

Then there's *Valorant*, a competitive FPS that feels like golf with guns – stop, plant your feet, aim, and then shoot. Hipfire kills in *Valorant* can feel divine when you've perfectly accounted for your gun's recoil pattern or nailed a life-affirming headshot. Hipfire is the default shooting mode for most firefights, but most guns also have an ADS option that alters how it shoots.

Sometimes, games opt for hipfire for the sake of simplicity. I love *Overwatch* for its deep roster of playstyles that mostly reserve right-click for cool abilities instead of ADS. Or *Deathloop*, a stealthy first-person shooter that not only encourages hipfiring its guns, but lets you dual wield one-handed weapons at the cost of ADS.

After years of studios chasing a single *Call of Duty*-shaped trend, it feels like there is no single blueprint for shooters anymore. Games can favour the hip or the scope and still find an audience for both. It's just more evidence that we're living in a golden age of shooters. ■



RIGHT: Worry not, hipfire is still king in *Halo Infinite*.







## WHY I LOVE

WHAT MAKES GAMES SPECIAL



# SNIPING

Why does something so bad feel so good? *By Imogen Mellor*



RIGHT: A sight for sore eyes.





**O**verwatch is a 'dead game' to many but I still play a lot. When I'm sitting with friends in Discord shooting the shit, I also like to shoot shit, and *Overwatch* is my preferred place to do that. I've played hundreds of hours of Blizzard's shooter, and for the last three or four years my favourite hero to main has been Widowmaker. And it's had a terrible knock-on effect in other games.

Sniping as a sexy french lady is, to me, the pièce de résistance of gunplay. There is nothing that sets off a small explosion of serotonin in my brain like getting a clean headshot on someone. The elegance. The ease of it all. It's the most competitive I get, to be honest, knowing that I killed someone even before they realised what was going on. Pure, shimmering, golden bliss.

I know Widowmaker's abilities through and through. Quick scoping isn't that great unless your enemy is really low. You should instead scope, wait for your gun to power up, and shoot at 100% power. I know this timing innately. It's second nature and frankly hard to unlearn for other games these days.

It can feel a little mean at times. When you've spent as many hours as I have in *Overwatch*, you cultivate such a good game sense that you can predict pretty basic player movements. I'm no god at the game, and I haven't even got a rank as I never put any real effort into the competitive mode. But I can at least pull off deliberately falling off a ledge for a Reaper to follow me down, before zipping back up and

#### NEED TO KNOW

**RELEASE**  
May 24, 2016

**DEVELOPER**  
Blizzard Entertainment

**PUBLISHER**  
In-house

**LINK**  
[playoverwatch.com](http://playoverwatch.com)

## SNIPING'S ELITE

*The best in the biz*



**WIDOWMAKER**  
*Overwatch's* femme fatale is a French ballerina with a sad history. After being kidnapped by the evil Talon and brainwashed, she murdered her own husband before returning to Talon.



**CHAMBER**  
*Valorant's* sniping specialist is also French. There must be something in the wine. His ultimate ability Tour De Force gives him a very expensive, high powered sniper rifle. Ooh la la.



**KARL FAIRBURNE**  
Karl Fairburne is an American sniper in the *Sniper Elite* series. If you've ever wondered what James Bond might be like as a Yank, he's your guy. He uses his rifle to foil the plans of evil Nazis.

headshotting them – a bad manners bamboozle. If it's so wrong, then why does it feel so bloomin' good?

### SHOOT TO KILL

My theory of why I love sniping is that it's because I'm an archer in real life. As a sport, archery is all about taking one shot at a time. You train yourself to make every arrow count. There are entire mental exercises you do when competing that have the

## IT'S SECOND NATURE, AND FRANKLY HARD TO UNLEARN FOR OTHER GAMES

sole intention of calming yourself. I think that training seeped into the way I treat guns in games.

The satisfaction I feel when sniping isn't just found in *Overwatch* either, it carries through to other titles. Every time I pick up something new, whatever class gives me the most power per bullet is what I'll gravitate towards. If you can give me a gun and a good distance, that's where I'll happily sit. Does it always go well? No. I'm playing a lot of *Valorant* at the moment and the



Operator sniper rifle, though a one shot kill, is seriously disrupted by any player movement. So I don't land 100% of my shots – but when I do, oh baby, there's nothing quite like it.

### SMOOTH OPERATOR

*Apex Legends* has guns that give me the chills too. Even before I find a trusty Longbow DMR or a Sentinel, I'm picking up that light purple ammo scattered about. Shoguns? Eh. SMGs? Nah. Up close and personal fights are a nightmare, but hey, I'll just avoid them the best I can, sit on this tower, and wait for a butt-sliding pedestrian. It helps that *Apex Legends* gives me extra teammates, so they can do the dirty work while I twiddle my thumbs at the top of a building.

I've also dipped into the *Sniper Elite* games, and frolicking about the continent of Europe with a massive gun on my back feels strangely like a holiday. Picking off Nazis one by one surrounded by fragrant lavender fields, is a delicious treat. And additional mechanics like bullet drop add nuance that keeps the experience feeling tactical even in single-player.

There are some who find sniping as a whole, cheesy. Sometimes it can feel oppressive and unescapable. If you're up against a good sniper, no matter the game, your breath can get sharp as you die. You start huffing and puffing about how you didn't get a chance to respond as a respawn timer slowly ticks. And that's a downside, because it's often such fun at the other end of the scope.

The point of sniping, for me, isn't exactly to win the game. I don't have an intense desire to conquer everything I play. A match loss, unless it's caused by unquantifiably stupid teammates, is fine. GGs all round, I had a good time. Really I just enjoy the weightless moment as something as simple as a single pull of muscle in a finger devastates some pixels on my monitor. It's pure. It's effortless. It's so much fun. Sniping is just the best. ■



**LEFT:** It's the eye of the spider, it's the thrill of the fight.







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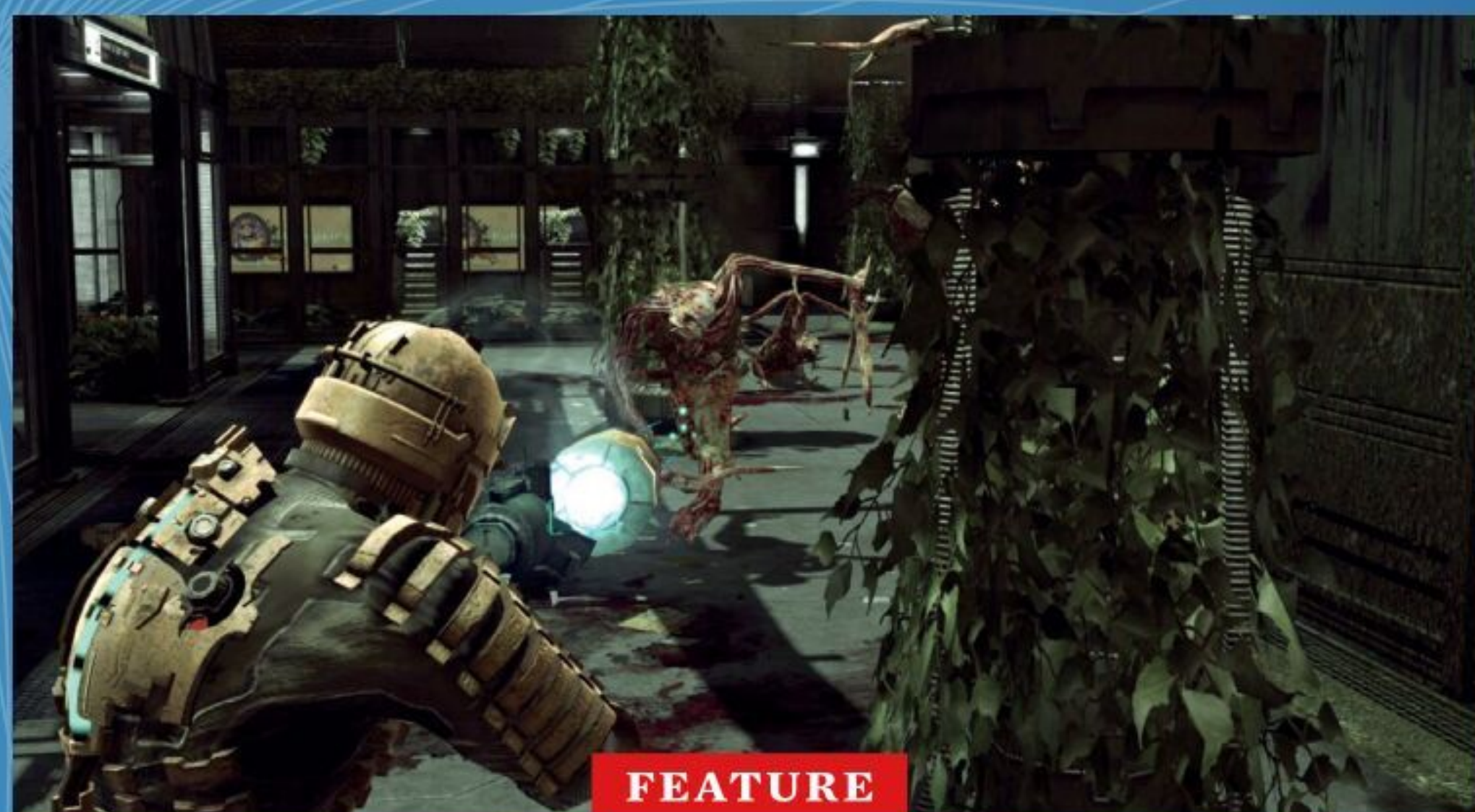
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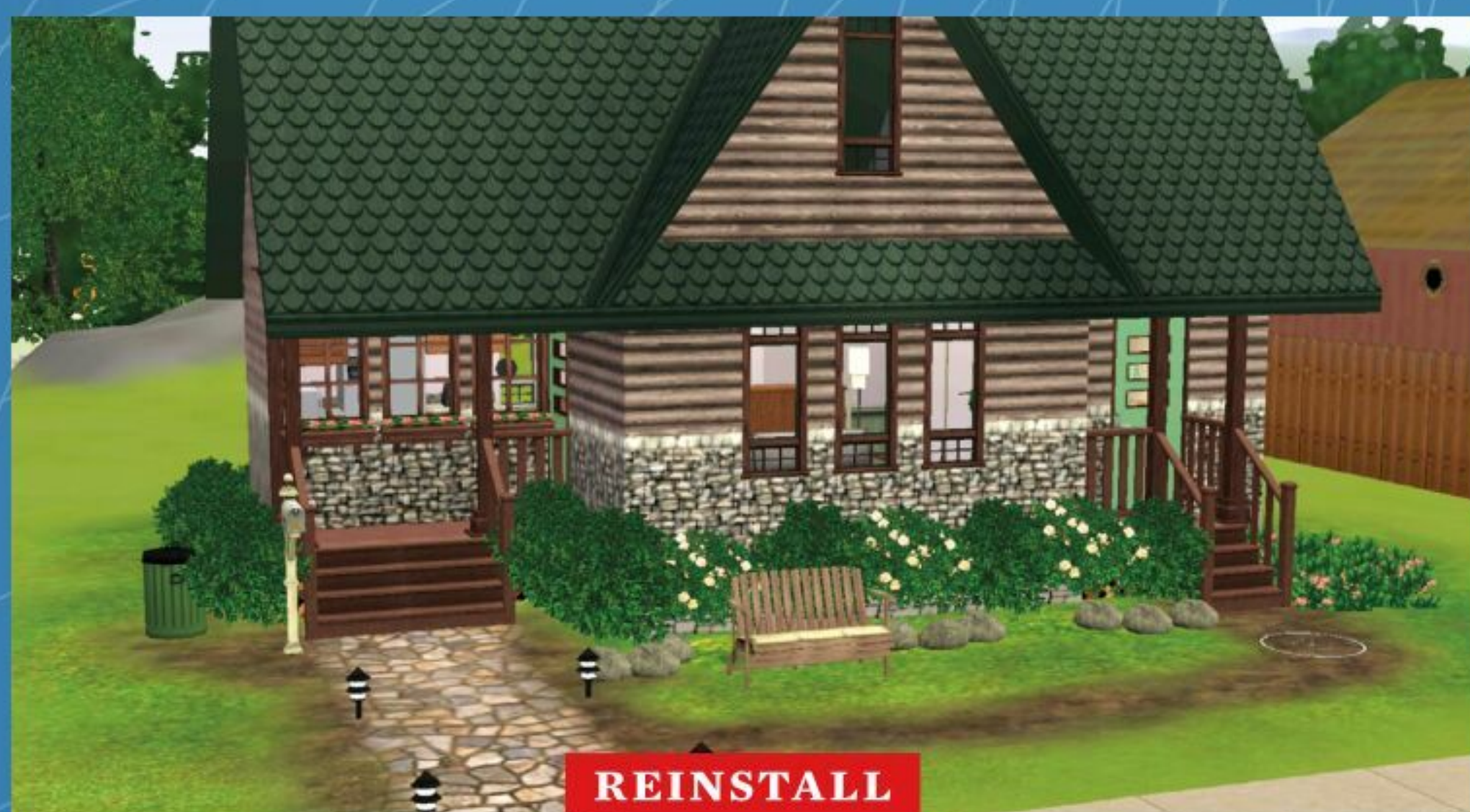


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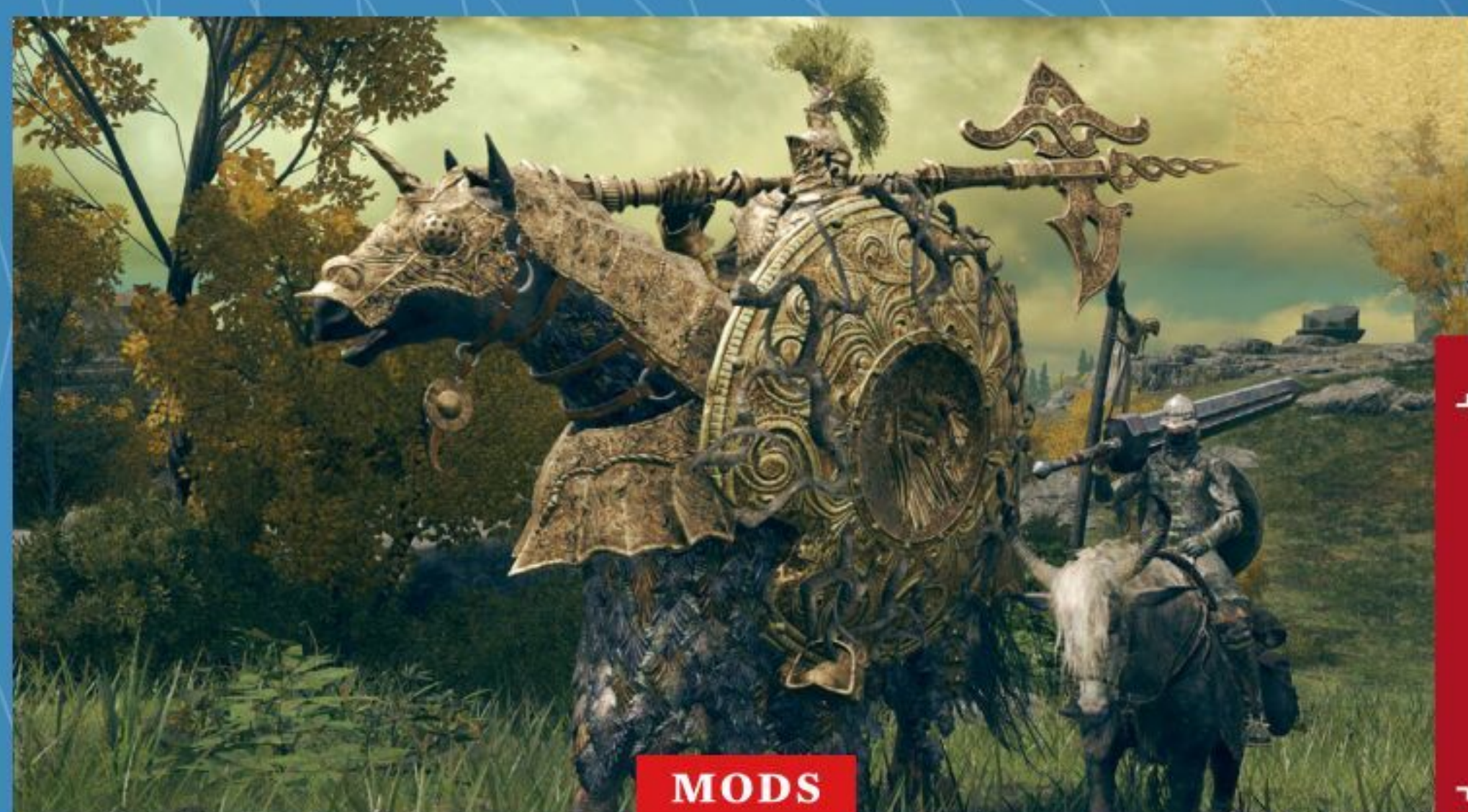
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